FEB. 19
1953

ENGINEERING NEWS-RECORD

★ ANNUAL REPORT AND FORECAST ★

Few generations of construction men have faced an era so promising of rewards—nor one so fraught with responsibility. Called by a new and popular President to "conscious renewal of faith in itself," our nation, already strong, is determined to be stronger; already prosperous, is dedicated to a better way of life for all its peoples. These are goals that only an expanding economy can assure; hopes that only the wealth-creating processes of construction can fulfill. Therein is the challenge. Therefrom arises the need for an appraisal of construction's prospects and assets — a need to which this issue is devoted.

Continued on page 51. . . .

THIS ISSUE
$2.00

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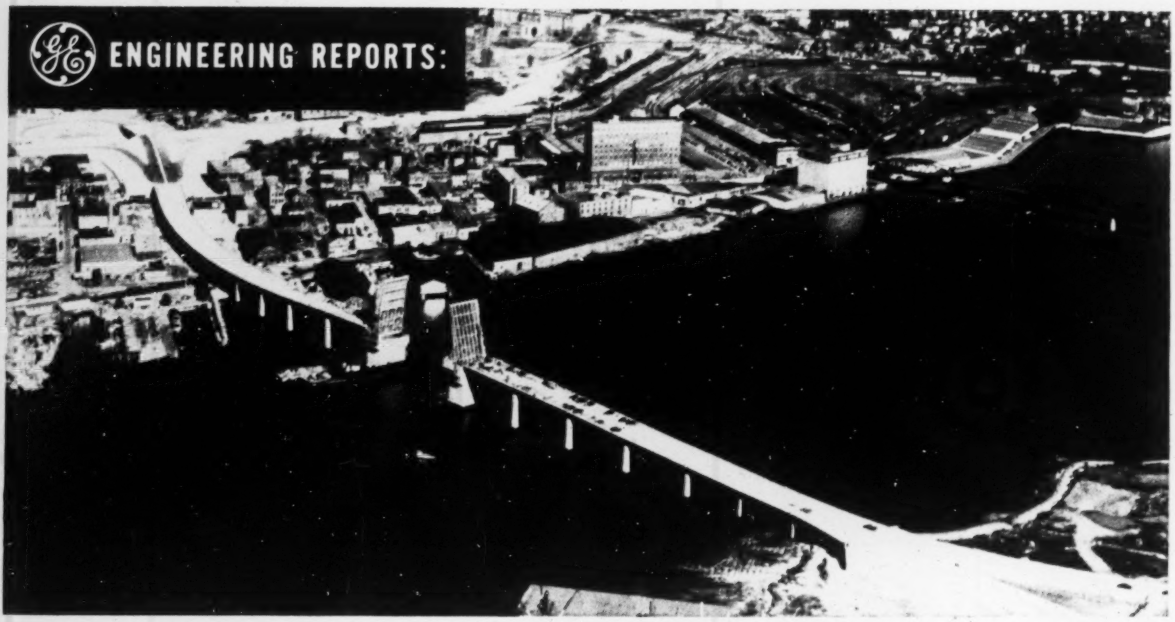
ENGINEERING REPORTS:



MOTORISTS SAVE 10 TO 30 MINUTES crossing from Norfolk to Portsmouth via the new G-E equipped bridge and tunnel. Bridge is 4-lane, 2135 ft between abutments. Bascule span is of the double-leaf, rolling-lift type with leaves each 90 ft long.

Bridge's drive system helps speed 29,000 cars per day

G-E equipment at Portsmouth - Norfolk Bridge gives fast movement, positive control of leaves

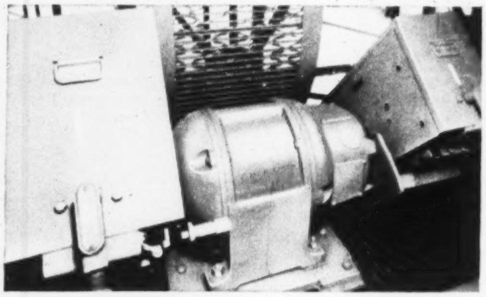
The new 4-lane bascule bridge across the Elizabeth River at Norfolk, Va.—part of a combined bridge and tunnel project built for the Portsmouth-Norfolk Bridge Tunnel Commission—is currently handling over 29,000 vehicles per day. Ability to handle this heavy traffic flow is due in part to electric equipment supplied and co-ordinated by General Electric.

In helping to develop the bridge's drive system, G-E engineers worked closely with J. E. Greiner Co., consulting engineers, Tidewater Construction Corp., engineers and contractors, and Tuck and Kendall Inc., electrical contractor. Result of this co-operation: a simple, dependable drive system that expedites traffic because it is easy to operate and provides positive-action control of bridge leaves for fast movement and smooth, safe seating.

This is one more example of how G-E engineers can help your engineers or consultants on electric equipment for heavy construction projects. Contact your local G-E Apparatus Sales Office early in the planning stage. General Electric Co., Schenectady 5, New York. 664-26

1878 75 1953
YEARS OF ELECTRICAL PROGRESS

POSITIVE-ACTION CONTROL of span motors is centered in this G-E operator's desk. Fine-scale selsyn dial pinpoints position of each leaf during seating.



EACH LEAF IS MOVED by 2 G-E 25-hp motors (one shown). G-E motor control center, operated from desk, controls these and tail locks, gates, barriers.

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VOLUME 150 FEBRUARY 19, 1953 No. 8

WALDO G. BOWMAN
Editor

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for every piping requirement ⟨⟨⟨⟨⟨⟨⟨

NO. 5 OF A SERIES
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Socket only
for split ring
fig. 110R
⅜ to ⅞ in. rod

Weldless eye nut
fig. 290
⅜ to 1½ in. rod

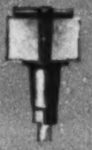
Forged steel clevis
fig. 299
⅜ to 1⅛ in. rod

Turnbuckle
drop forged steel
fig. 230
⅜ to 1½ in. rod

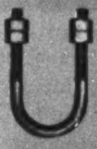
Rod coupling
fig. 136
⅜ to ⅞ in. rod

Adj. swivel coupling
fig. 134
⅜ to ⅞ in. rod

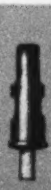
Turnbuckle adjuster
fig. 114

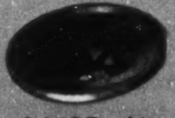

Rod coupling
fig. 308
toggle bolt
fig. 309
⅜ to ⅞ in. rod

U-HANGERS
EXTENSION
CEILING PLATE


Standard
U bolt
fig. 137

Adj. wrought
U pipe hanger
fig. 252
⅜ to ⅞ in. rod


Extension piece
fig. 157
⅜ to ⅞ in. rod


Spring Ceiling plate
fig.133
⅜ to ¾ in. rod

ASSEMBLIES

Split ring
with socket
and coach screw

Split ring,
socket and
ceiling flange

Extension split
ring hanger
fig. 139

Adj. swivel ring
with coach screw
fig. 100

Adj. clip
hanger
fig. 106

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or write for
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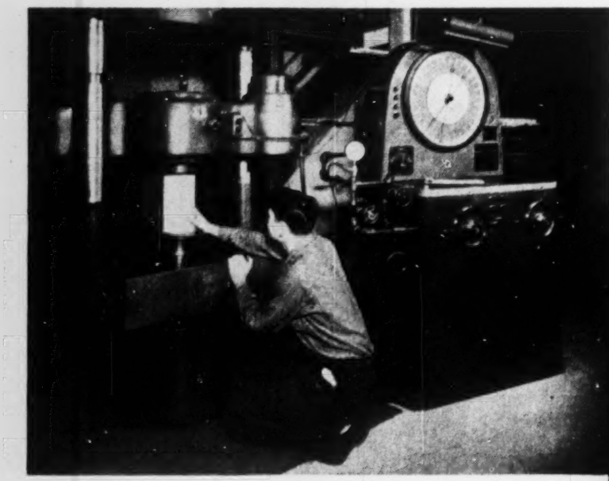
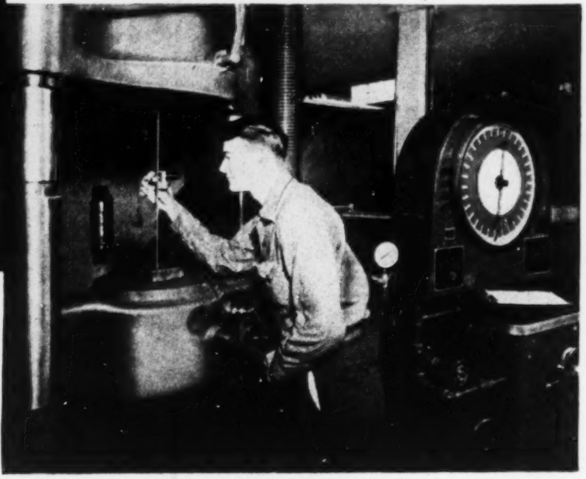
. . . a good pipeline

is the sum of good parts . . .



▲ *Testing the compressive strength of a concrete cylinder*



Testing the tensile strength of steel reinforcing wire ▶

The finest design and the most accurate workmanship cannot result in a superior product *unless* the materials used are of the highest quality. That's why Lock Joint assures the excellence of each of its pipes by constantly testing both the finished product *and* the individual materials used.

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LOC[illegible]INT
Reinf[illegible]
PRESS[illegible]PIPE

B.F. Goodrich tires

roll 50,000 miles on rocks and gravel

Clayton Baum points out Rock tire tread details to Owner M. C. Hubbell.

HAULING ore from mine to mill is the job of the tractors and trailers of the M. C. Hubbell Company, Sahuarita, Arizona. These units carry 18 to 21-ton loads over winding, hilly roads that cause constant weight shifting — over roads strewn with abrasive gravel and razor-sharp rock that cut and chew tires.

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Owner M. C. Hubbell likes the tough, cut-resistant tread and husky, full-traction cleats of the Rock tire. And like all other BFG off-the-road tires, the Rock tire is built with the patented nylon shock shield. Layers of strong, elastic nylon cords are built into the tire between the tread and cord body. Under impact, these cords stretch together to shield the tire body from shocks and bruises. You profit four ways from this exclusive nylon shock shield:

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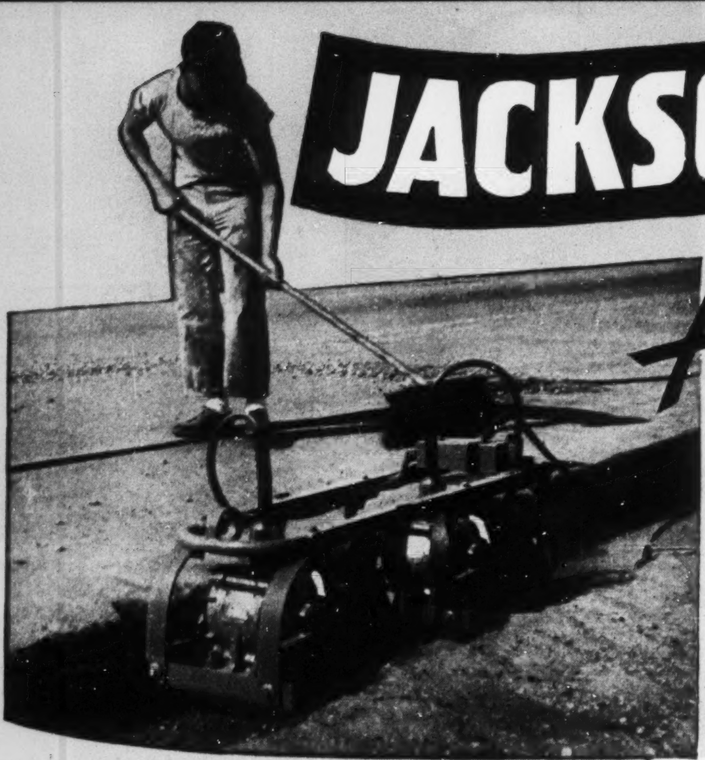
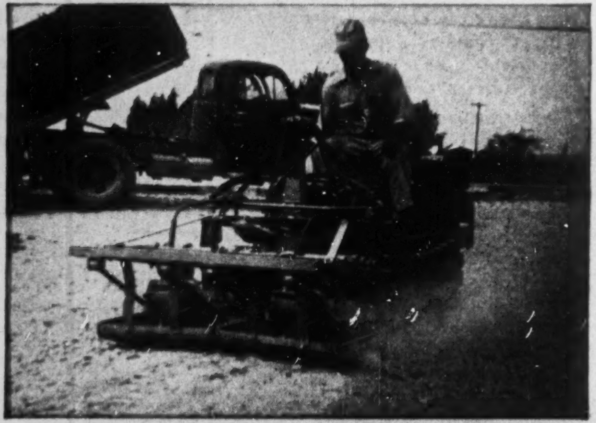


Self-propelled Tandem Jackson Compactor (15-in. wide) compacting sub-base to specified density, in one pass, for blacktop pavement widening strip. Controlled by spreader operator, it easily keeps up with spreader. Rate: 38 ft. per minute.



The super-powerful improved Jackson Vibratory Compactor which, as a manually operated machine, has proved so extremely efficient in the compaction of granular soils, sub-bases for blacktop highway widening projects and highway blacktop patching and widening, is now available in multiple units — in widths to meet the requirements of any project of any size — tailored to fit.

At left is illustrated a two-unit (4 ft. wide) Jackson Vibratory Compactor on macadam base course work. It is applied to a diminutive tractor, on which is mounted a Jackson Power Plant for operating compactors. With this new, faster and better means of macadam densification, 10" depths of rock can be keyed and compacted in just two passes. Voids completely filled with fines in just two additional passes, which is the operation shown.

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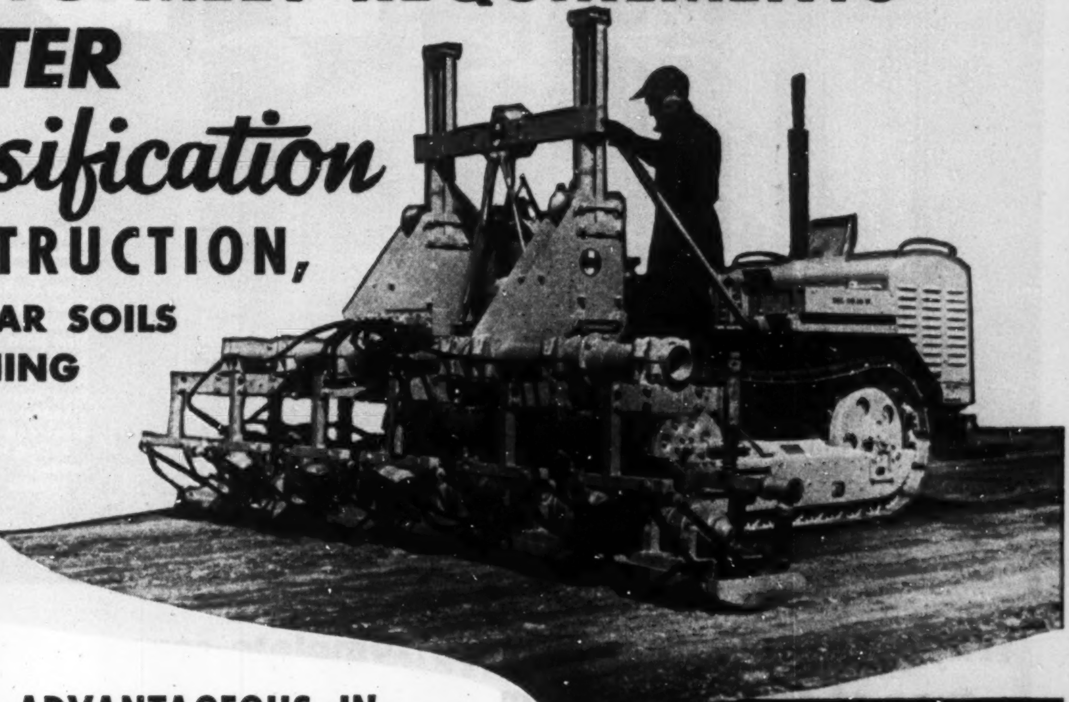

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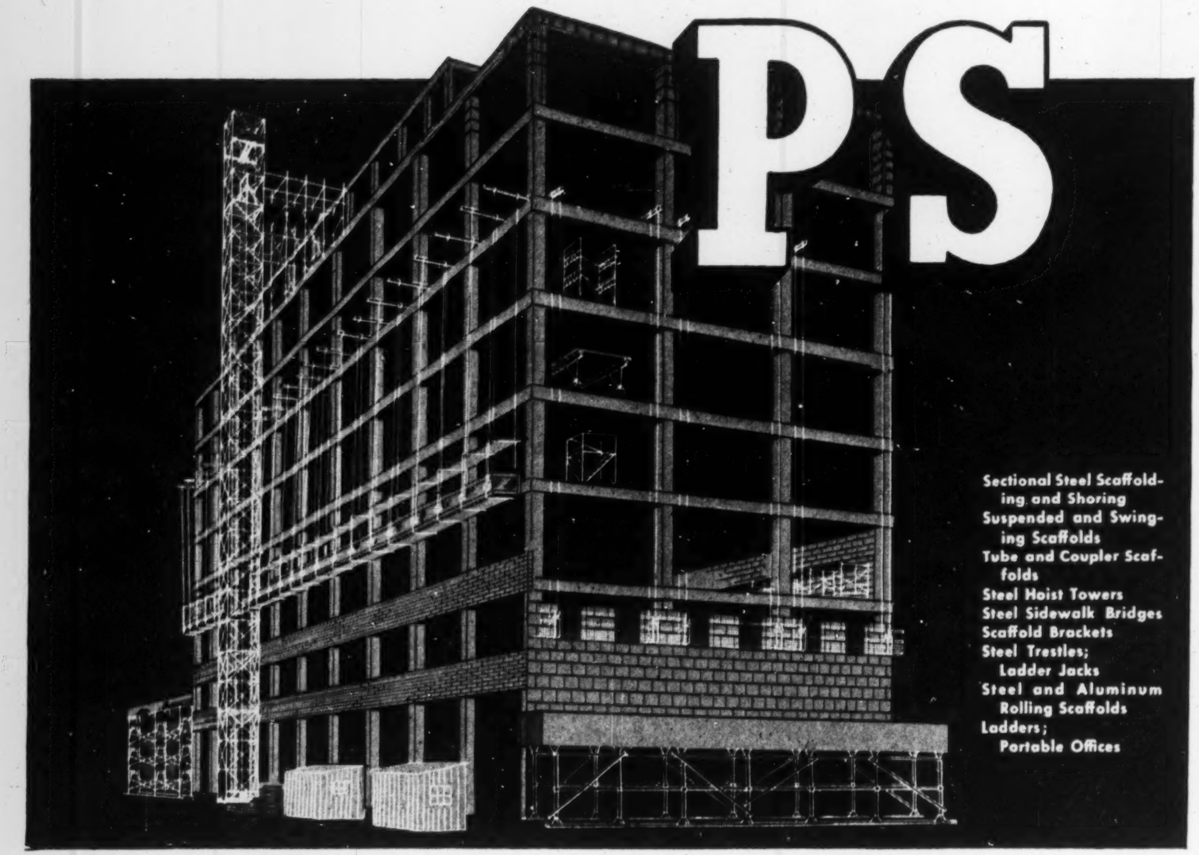

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ONE, TWO, THREE

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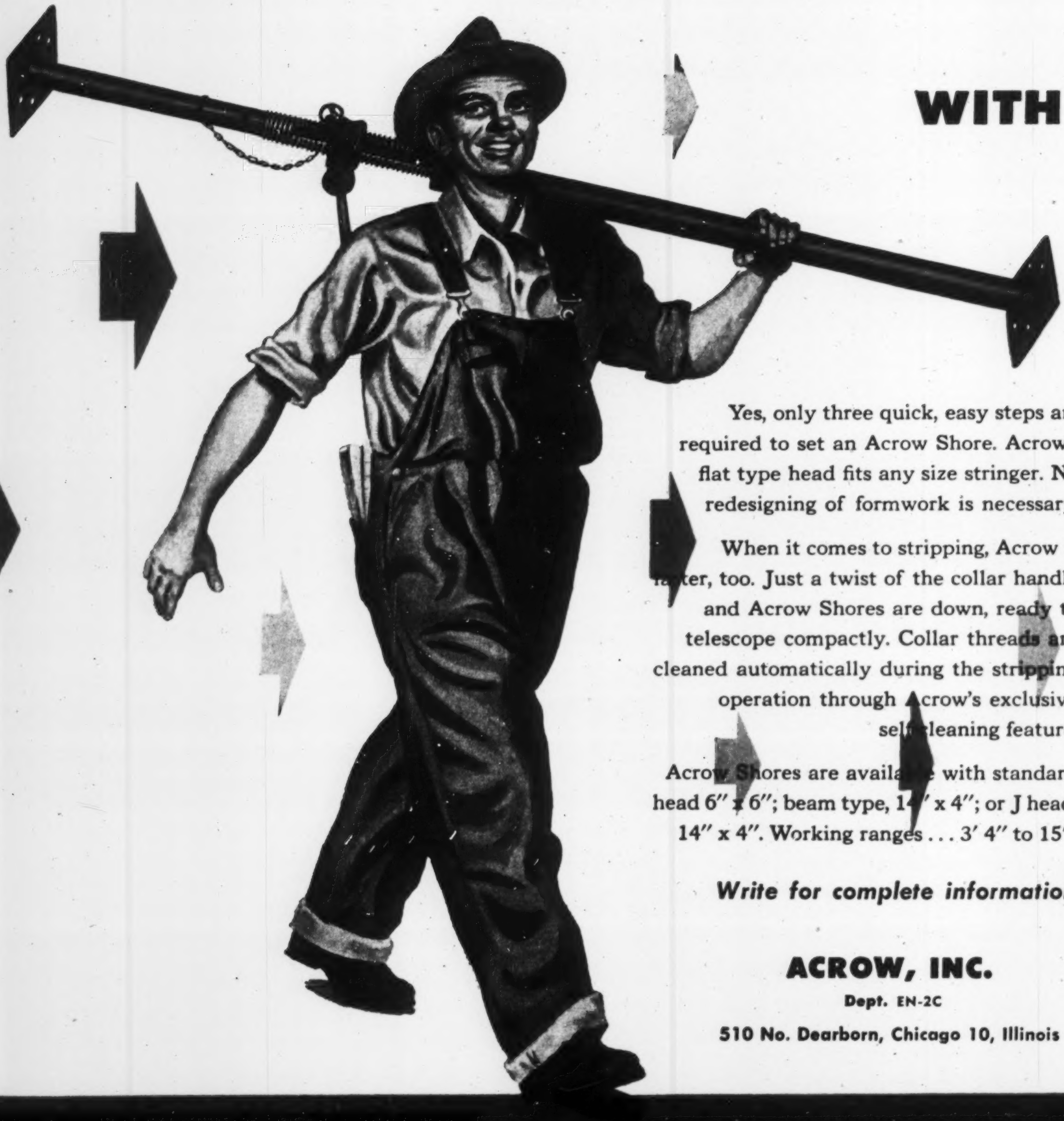

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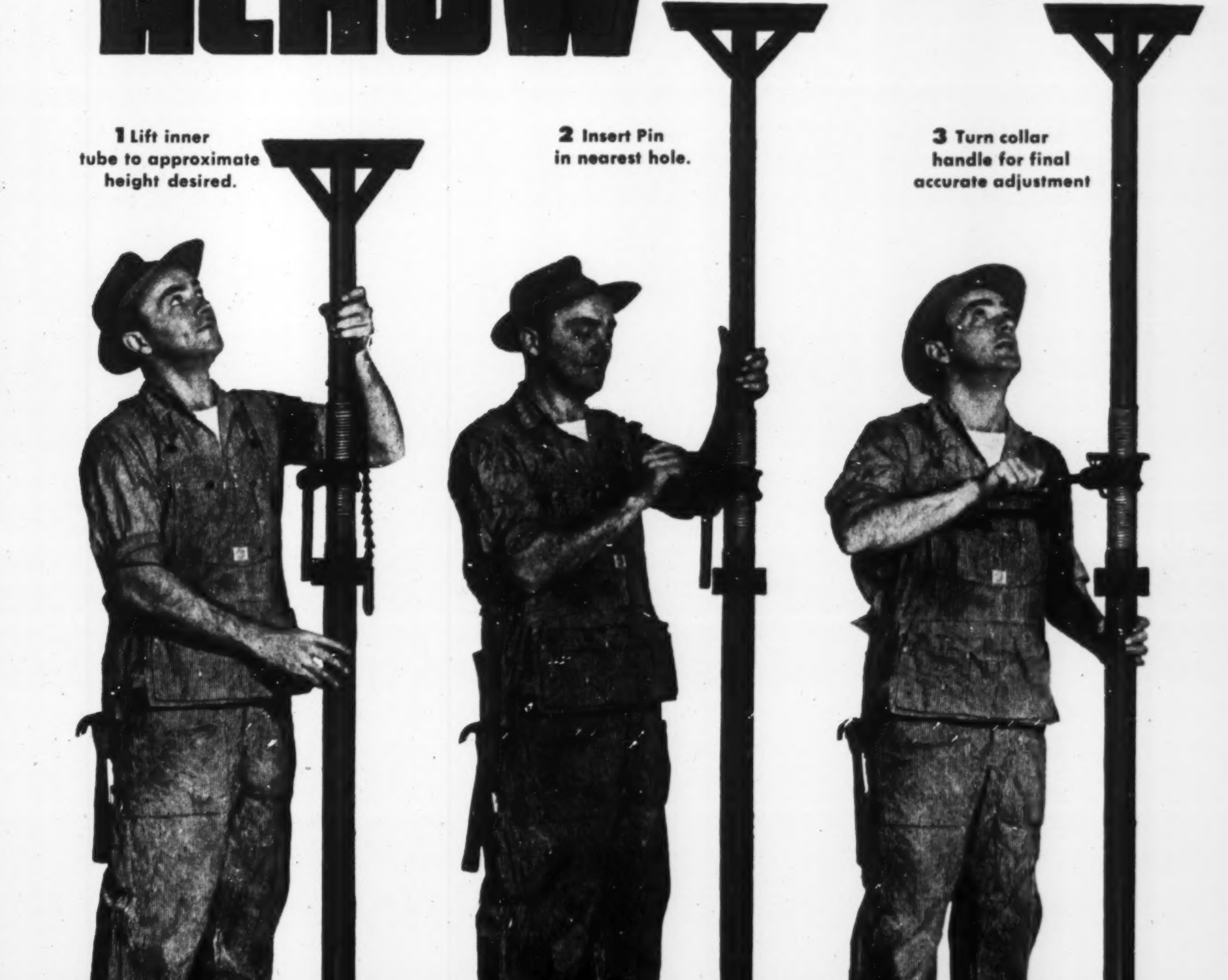
and they're UP

ACROW ADJUSTABLE STEEL SHORES



1 Lift inner tube to approximate height desired.

2 Insert Pin in nearest hole.

3 Turn collar handle for final accurate adjustment

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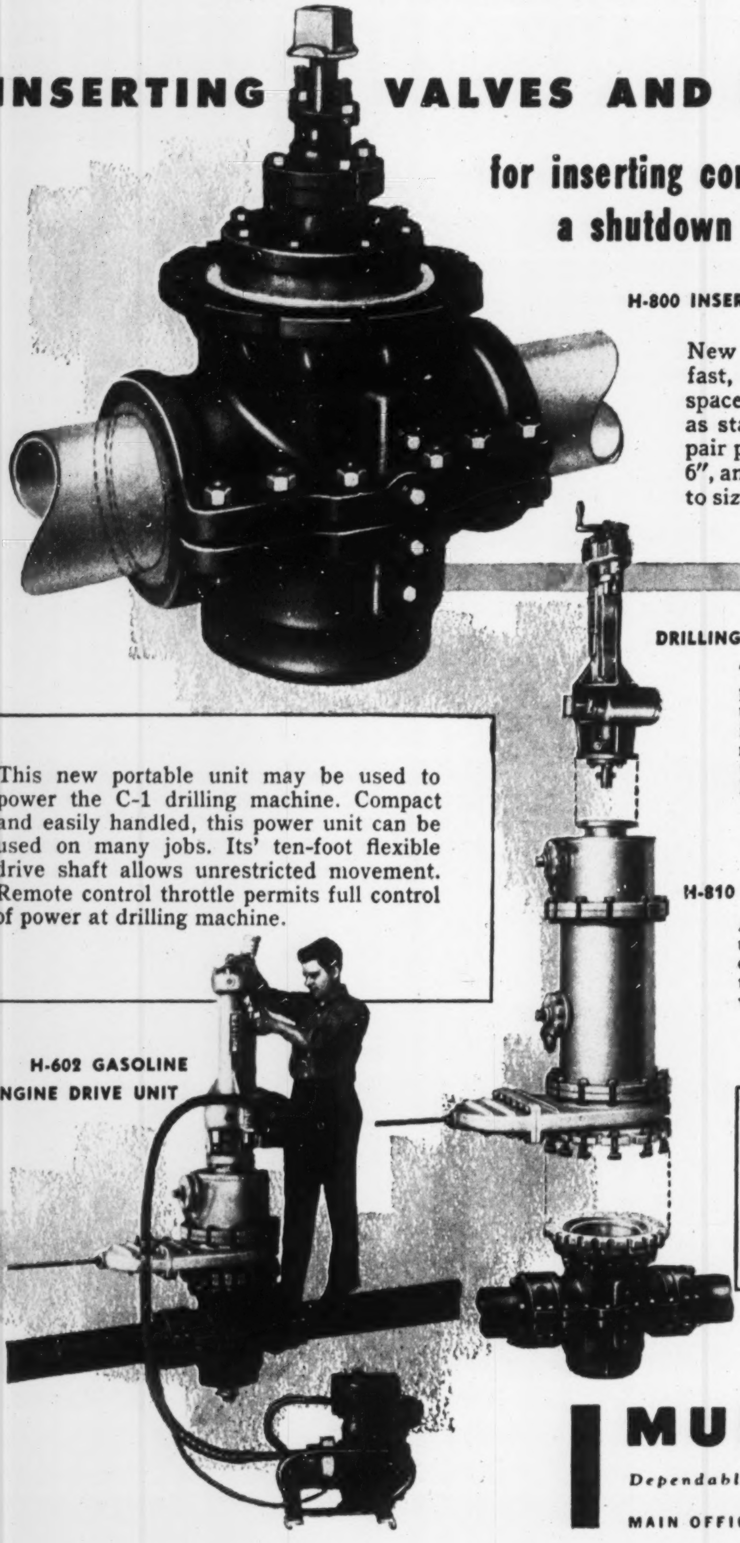
INSERTING VALVES AND EQUIPMENT

for inserting control valves where a shutdown is impractical



H-800 INSERTING VALVE

New smaller valve sleeve permits fast, easy installation in minimum space. Valve mechanism is the same as standard Mueller gate valve (repair parts interchangeable). Sizes 4", 6", and 8" (sizes of valves correspond to size of main).

DRILLING MACHINE

The C-C hand-operated o. C-1 power-operated machine may be used for both drilling the main and inserting the valve plug. The C-1 machine may be operated either by the H-660 Air Motor or the new H-602 Gasoline Engine Drive Unit.

This new portable unit may be used to power the C-1 drilling machine. Compact and easily handled, this power unit can be used on many jobs. Its' ten-foot flexible drive shaft allows unrestricted movement. Remote control throttle permits full control of power at drilling machine.

H-810 BASIC INSERTING EQUIPMENT

An assembly of pressure confining units plus a slide valve. Permits the drilling of the main and inserting of the valve plug, easily and safely, with no water loss.

H-602 GASOLINE ENGINE DRIVE UNIT

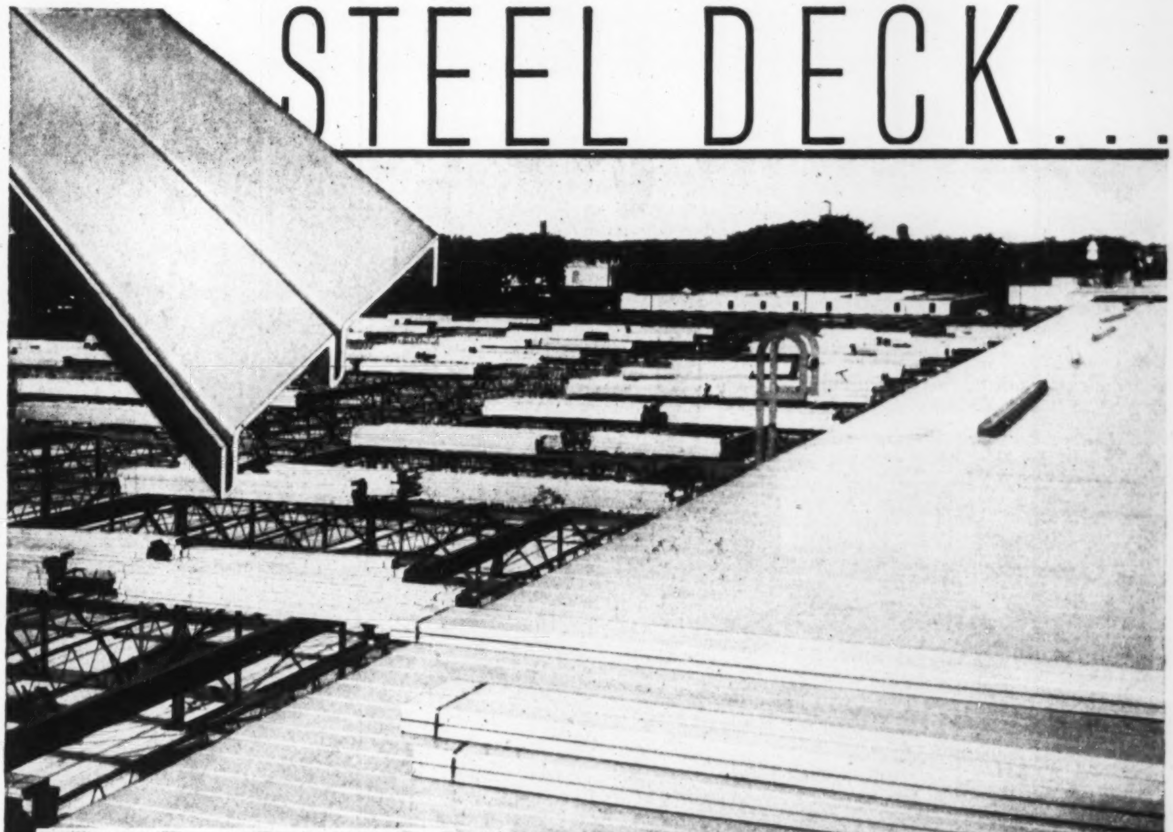
Write for Catalog H-20 and H-602. Complete illustrated instruction manuals and parts list shipped with equipment.

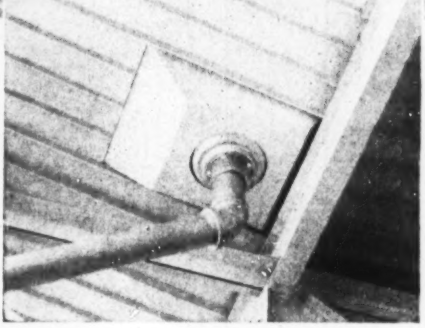
MUELLER CO.

Dependable Since 1857

MAIN OFFICE & FACTORY DECATUR, ILLINOIS

STEEL DECK . . .





BUILT-UP SADDLES ELIMINATED

Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting, fitting or bending necessary.

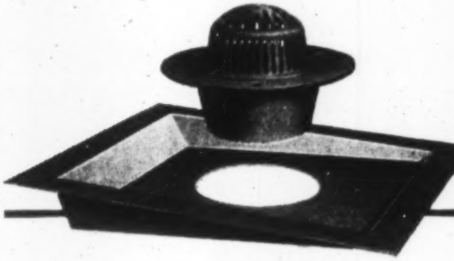
Roofs a Greater Percentage of New Construction Year after Year!

The increasing preference year after year for Steel Deck in roof construction is a natural development . . . because, Steel Deck offers certain definite advantages not common to other types of roof construction. It can be installed in any kind of weather—no waiting for materials to dry . . . it can be insulated to the exact degree to meet "U" Factor requirements in any given locality without regard to structural properties. And, most important, Steel Deck's light weight permits substantial savings in the supporting structure—total dead load, including insulation and waterproofing material, is less than any other type of permanent roof construction. Mahon Steel Deck is available in either Galvanized or Enamel Coated Steel. Stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enameling process, the metal is cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. See Mahon's Insert in Sweet's Files for complete information, or write for Catalogs B-53-A and B.

THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in Principal Cities

Manufacturers of Steel Deck for Roofs, Partitions, Ceilings and Concrete Floor Forms; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel; Insulated Metal Wall Panels; Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

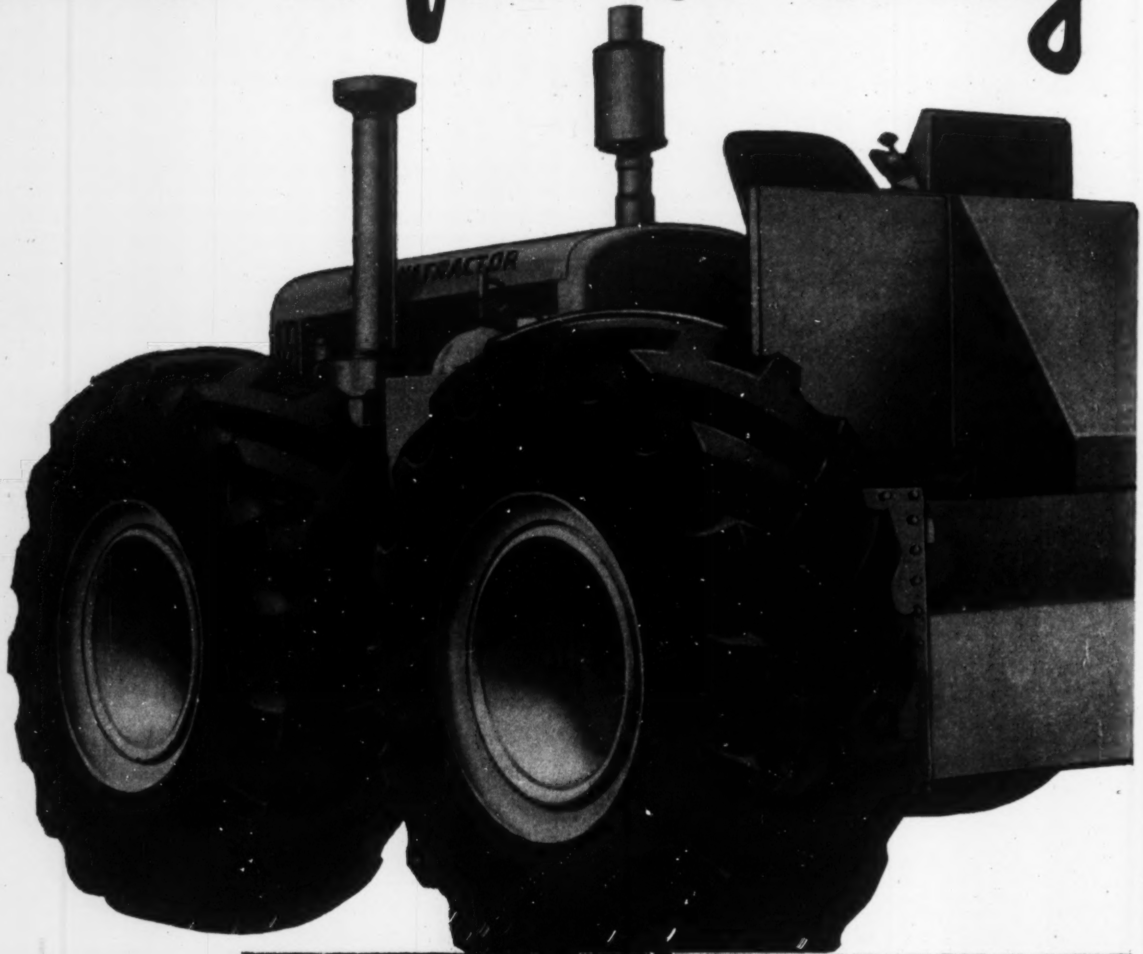


SUMP RECESSES and SUMPS

Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

MAHON

Excuse us for not telling



Auxiliary attachments, available any time, make Tournatractor year 'round money-maker

BULLDOZER, ANGLEDOZER For dozing work, Tournatractor can be equipped any time with A-frame and electric-control 2½-yd. Bulldozer, 3-yd. Angledozer, or 11'4" x 54" Root Rake.

PUSHER PLATE, PCU With all-steel pusher plate attached to standard bumper bar, Tournatractor push-loads scrapers. Double-drum electric PCU available for operating towed equipment.

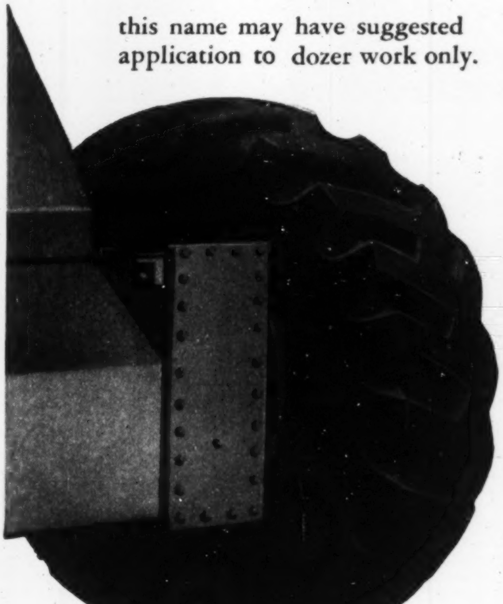
NOTE: Down-pressure attachment, blade tilt mechanism, 14-ton side-boom crane, torque converter, cab, lights also available.

FOR 24 YEARS THE LEADER IN RUBBER-TIRED

you!

for 6 years, we've been calling our 186 hp, 19 mph rubber-tired tractor a Tournadozer...

this name may have suggested application to dozer work only.



We should have told you otherwise. Actually, over the years, this unit has proved to be much more than a dozer.

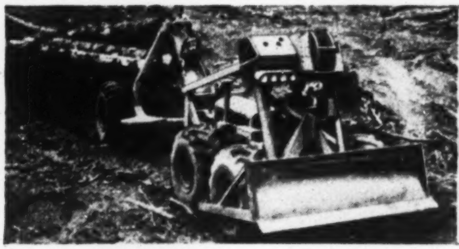
It's an all-purpose tool — just as effective as a pull-tractor, or a push-tractor, or a haul-tractor as it is a dozing-tractor. Its high speeds and fast maneuvering are of even greater advantage on hauling and pushing than on dozing where output requirements and range of operations are limited.

To clarify its many applications, we are re-naming the unit "Tournatractor". We are also revising our price lists to show our price for the tractor unit without the A-frame, blade, and blade controls, so that it will be directly comparable to crawler-tractor prices. On this basis, you will find you can buy a 4-wheel, high-speed, rubber-tired Tournatractor, FOB Longview, Texas, for only $18,840 (with 18.00 x 25 tires). You then can add the matched attachments you want.

This price structure is similar to that charged for any big, heavy-duty crawler-tractor, but look at the money-making advantages you get with Tournatractor:

1. **Power... 186 hp.**
2. **Anti-friction power flow, engine to treads.**
3. **Speeds forward — to 19 mph.**
4. **Speeds reverse — to 8 mph.**
5. **Instant speed change... constant-mesh transmission.**
6. **Go-anywhere, 4-wheel-drive on rubber... wider range of work and profit opportunity... no planking curbs, no trailer haul.**
7. **Electric fingertip control steer and shift... easier, faster maneuvering.**
8. **Giant safety air brakes... 2822 sq. in. on 4 wheels.**
9. **Low maintenance... elimination of some 500 crawler-track assembly parts that grind and wear in dirt on crawling tractors.**
10. **Easier operation, less fatigue, easier to get good operators.**

Investigate this rubber-tired tractor... it will do 85% of your tractor jobs *twice* as fast as a crawler. Ask your LeTourneau Distributor to arrange a demonstration and prove it on your job. Make your own comparison of production. You'll find the profits with Tournatractor too big to miss. Write or phone today.



67,000-LB. WINCH For skidding logs, pulling mired trucks, etc. Operates at 56 or 113 ft./min., in or out, while rig is in motion or stationary. Can pull from any angle up to 90°.

SNOW PLOW V-type. Mounts on same A-frame as Bulldozer or Angledozer. Has 12'4" clearing width, 6½' clearing height. 9' electric-control Snow Wing available as optional equipment.

FOR SCRAPER OPERATION Double electric PCU operates any cable-controlled scraper. For LeTourneau electric scraper, optional electric jack can replace PCU. Just "plug in" and go to work.

Tournatractor—Trademark Tournadozer, Angledozer—Trademark Reg. U. S. Pat. Off. T-313-G

DIRTMOVING

R. G. LeTOURNEAU, INC.
Peoria, Illinois

SOCONY
VACUUM
15
OIL CO. INC.

SERVICE PIN... for you, too

Chances are you've seen this pin. It represents 15 years of service with Socony-Vacuum. Six out of 10 of our engineers and salesmen wear it. Four out of 10 have served over 20 years. In fact, the average length of service of *all* Socony-Vacuum lubrication representatives calling on the construction industry is almost 17 years! All this petroleum engineering experience, the world's greatest, is yours when you call on Socony-Vacuum. Why accept anything less?

CORRECT LUBRICATION
for Contractors

SOCONY-VACUUM

WORLD'S GREATEST
LUBRICATION KNOWLEDGE AND
ENGINEERING SERVICE

THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL CO., INC., MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

Always a smooth road ahead *on the Pennsylvania Turnpike*

Pennsylvania Turnpike Commission

350,000 FEET OF FLEXCELL* JOINT FILLER

ASSURE SMOOTH, TIGHT, MAINTENANCE-FREE JOINTS!

No bumpy, bulging joints—no gaping crevices—no costly maintenance, when you use Flexcell Bituminous Fibre Expansion Joint Filler wherever concrete meets concrete!

Flexcell Joint Filler is made with a tough, durable cane fibre base containing millions of tiny air cells. These air cells permit Flexcell to absorb pressure from expanding concrete without extruding—and spring back to keep the joint closed when the concrete contracts. Thus, practically maintenance-free joints that *stay* smooth, tight and attractive are assured!

Low in Cost

Flexcell Joint Filler is easy to handle, easy to work with. Provides neat, finished joints without trimming. It is impregnated with asphalt to resist moisture—and protected by the patented Ferox® Process against dry rot and termites. Withstands toughest service, severest weather conditions—saves on maintenance year after year. Yet with all this, it is *low in cost!*

Flexcell Joint Filler has long been specified by leading engineers, contractors and architects—as well as the United States Army, Navy and other Federal, State and Municipal agencies. It will pay you to discover the reasons for this preference . . . *before* you start your next job!

Mail coupon below for complete information on the advantages and economies of using Flexcell Joint Filler for pavements, runways, sidewalks, curbs, gutters, driveways, concrete floors. No cost or obligation!

Another CELOTEX Product
REG. U. S. PAT. OFF.

FLEXCELL
REG. U. S. PAT. OFF.

BITUMINOUS FIBRE EXPANSION JOINT FILLER
The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

*Flexcell is a Trademark identifying Bituminous Fibre Expansion Joint Filler marketed by The Celotex Corporation.

MAIL COUPON TODAY!

The Celotex Corporation, Dept. ENR-23
120 S. LaSalle St., Chicago 3, Ill.

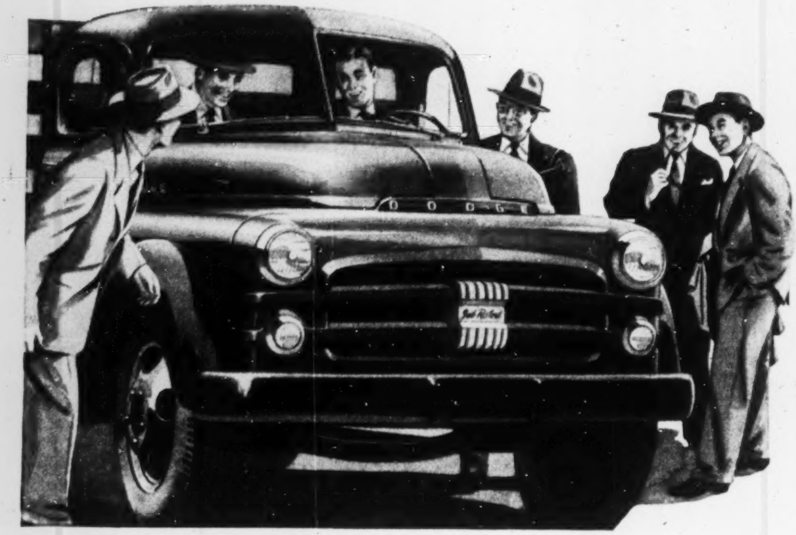
Without obligation, please send me complete data and prices on Flexcell Bituminous Fibre Expansion Joint Filler.

Name________________________________

Address________________________________

City________________Zone______State__________

NEW HORSEPOWER!
NEW BRAKING POWER!
NEW EARNING POWER!



Biggest truck values of the year! New, just-announced Dodge trucks with features like . . .

7 high-compression engines, with 100 to 171 horsepower, give you more ton-miles per hour, more deliveries per day! New styling inside and out, tough new floors in pick-up and panel bodies, new tighter-than-ever tailgates on pick-ups and expresses! A total of more than 50 brand-new features to boost truck earning power!

More, you get such famous Dodge extra values as lightweight aluminum-alloy pistons, rivetless Cyclebond brake linings on all hydraulic brakes, moistureproof ignition, shot-peened rear axle shafts! Get more truck for your money . . . see your neighborly Dodge dealer!

NEW!
MORE POWERFUL ENGINES!

7 high-horsepower engines! 3 brand-new, with increased displacement, greater cooling capacity, twin carburetion available on larger trucks!

NEW!
BETTER BRAKING!

Super-safe brakes stop smoothly, easily, with less pedal pressure! New increased stopping ability on 1- thru 2½-ton trucks!

NEW!
NO GEAR-SHIFTING!

Truck-o-matic transmission with gyrol Fluid Drive available on ½- and ¾-ton models! Saves shifting, yet lets you rock out of snow, mud!

NEW!
OVER 50 FEATURES!

Reinforced cab construction, larger exhaust system, new 116″ wheelbase ½-ton pick-up! Dodge-Tint glass, higher output heaters available!

There's one to fit your job . . . ½-ton through 4-ton. See your friendly Dodge dealer.

DODGE "Job-Rated" TRUCKS

MONSANTO PENTA
Protects

Portion of mercury cell system in government chlorine plant. Platforms, stairs, and railings are penta pressure-treated.

All exposed lumber—281,000 board feet of it—in the U. S. Army's $15 million chlorine-caustic plant at Muscle Shoals, Alabama, has been pressure-treated with Monsanto Penta preservative. With Penta treatment, years of protection against decay have been given to wood used in cell-room platforms, around cell gas coolers, acid drying towers, brine system, etc. Penta can be formulated to leave wood clean and paintable—and moisture-resistant, if desired.

TO MAKE WOOD LAST LONGER . . . USE PENTA

Bridges and highway structures . . . power-line poles, crossarms and transformer racks . . . railroad lumber, from car decking to shipping platforms . . . schools, hospitals, public buildings . . . farm buildings of all types . . . private homes, commercial construction . . . wherever wood is exposed to weather or insects.

MONSANTO
CHEMICALS AND PLASTICS
SERVING INDUSTRY . . . WHICH SERVES MANKIND

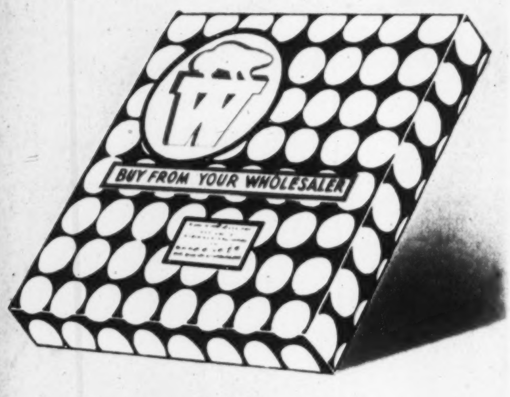
SEND for the complete story on penta uses, specifications, handling instructions. Write us for the booklet, "Specify Penta": Monsanto Chemical Company, Organic Chemicals Division, 800 North Twelfth Blvd., St. Louis 1, Missouri.

WOLVERINE COPPER WATER TUBE

in this..

HANDY CARTON

A tough, durable carton holds each coil of Wolverine copper water tube. As a result, the tube is protected, easy to store and to inventory, easy to merchandise and re-ship.



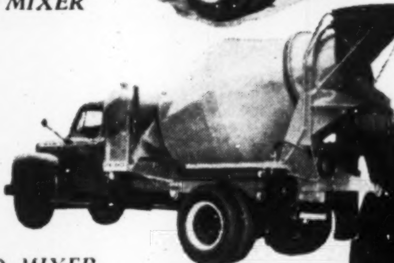
Buy from your Wholesaler

WOLVERINE TUBE DIVISION
of CALUMET & HECLA, INC.
Manufacturers of tubing exclusively
1457 CENTRAL AVE. • DETROIT 9, MICHIGAN
Plants in Detroit, Mich. and Decatur, Ala.

Ask for **WOLVERINE** COPPER **TUBE** *by Name*

Export Department, 13 E. 40th St., New York 16, N. Y.

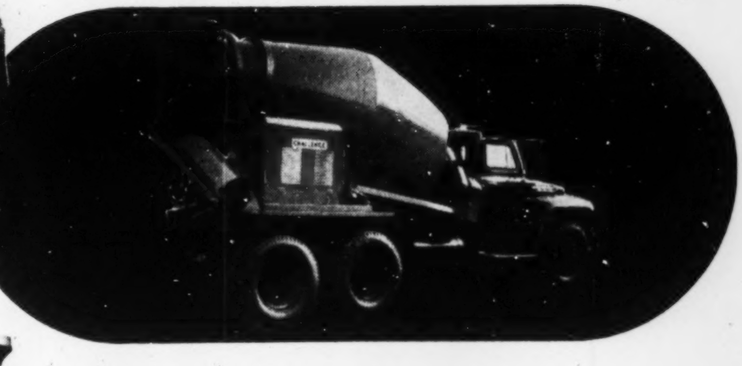
3 YARD MIXER



3½ YARD MIXER

The recently introduced side engine mount (right) is another "FIRST" for Challenge and is currently in production on 5, 6, & 6½ yard sizes. By placing the mixer engine to the rear at the side of the drum, the center of gravity is moved forward approximately 18 inches, moving thousands of pounds additional weight (all extra net payload) on a heavy duty front axle.

Team up with Challenge



for greater PROFIT in '53...

4 YARD MIXER

5 YARD MIXER

With the only complete line of truck mixers on the market, Challenge offers the Right Size Mixer to team up with the standard 2 or 3 axle truck of your choice. A careful analysis of Challenge sizes and their application will enable you to utilize the physical and legal capacity of mixer and truck to assure full rated capacity payloads. In addition, the use of standard industrial equipment in their manufacture keeps operating and maintenance costs to absolute minimum. You can be sure of greater profit if you team up with Challenge in '53.

6 YARD MIXER

COOK BROS. TRUCK EQUIPMENT

COOK BROS.
EQUIPMENT COMPANY
1815 No. Broadway, CApitol 2-9111
Los Angeles 31, California

Exclusive Distributors for CHALLENGE
... Standard of The Industry.

6½ YARD MIXER

COOK BROS. EQUIPMENT CO. ENR

Please send detailed information on Challenge Mixer sizes, together with name and address of my nearest Challenge Dealer.

NAME______________________________

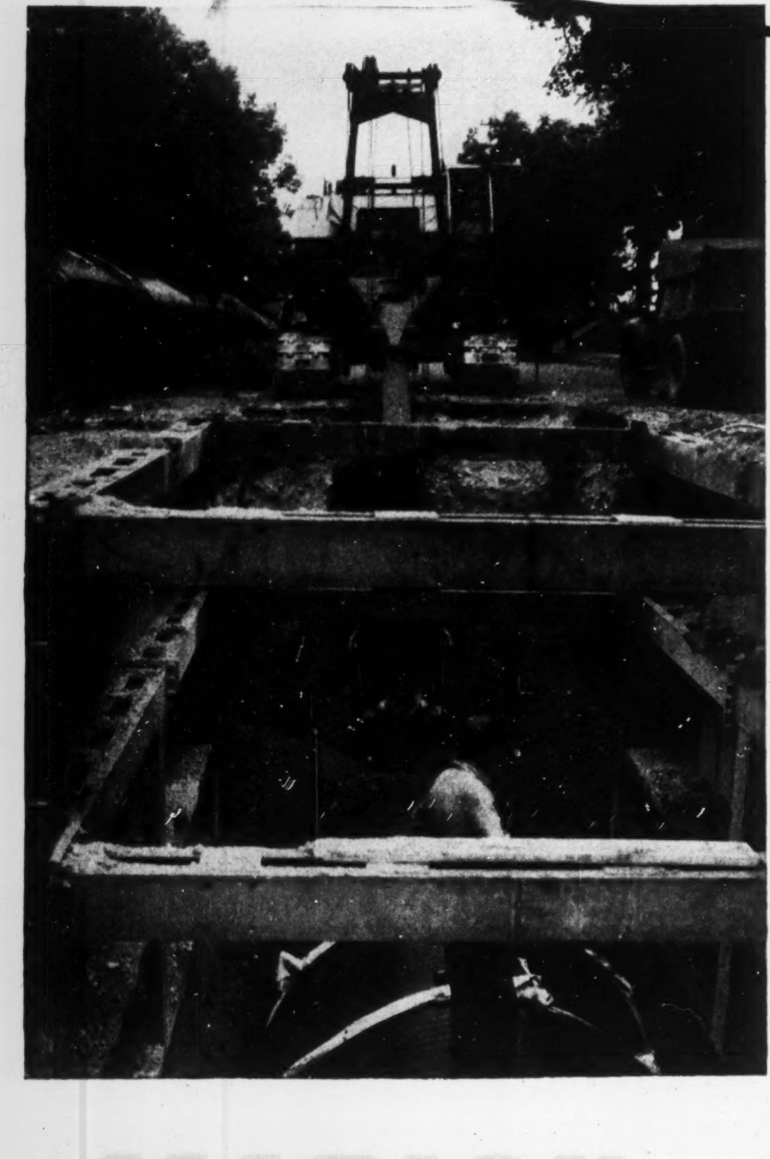
ADDRESS___________________________

CITY___________________ STATE________

Two Good Ideas:

1 A movable steel form to take the place of trench piling.

2 A MARION 362 for dependable cost-cutting excavation work.



Haddad Construction Company of Columbus puts two good ideas to work on its sewer projects.

One is a movable steel form which prevents cave-ins while pipe is laid. Its variable width makes it adaptable to various sewer jobs. The backhoe pulls it forward like a sled as pipe is laid.

Its other good idea is the selection of a MARION 362 Backhoe to handle the excavating. Dependability, accurate and easy-operated air control, reserve power and maneuverability are some of the 362 features that please Said S. Haddad, president. The 1-3/4 cu. yd. bucket moves plenty of dirt and the 362's range handles deepest trenches with ease.

Let your nearest MARION representative show you what a versatile 362 can do on your jobs.

●

The need for protective piling is eliminated by the fabricated steel form shown in the foreground. Width of form can be varied as needed. The form is pulled along in the trench like a sled by the MARION 362, providing positive protection while pipe is lowered and fitted.

MARION POWER SHOVEL CO.
MARION, OHIO, U. S. A.

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

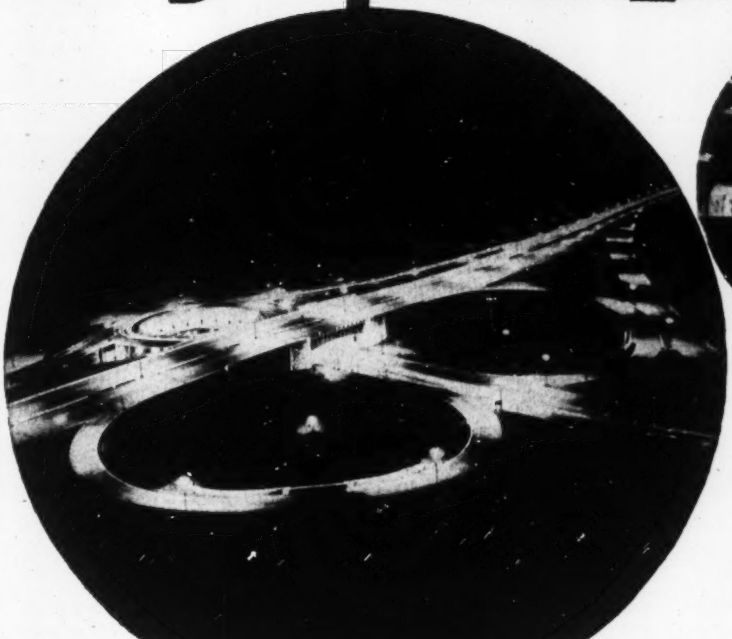
from 3/4 cu. yd.
to 45 cu. yds.

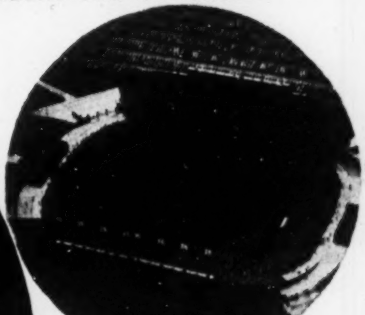
600,000,000,000
air bubbles
per cubic yard
with

ayr trap

THE AIR-ENTRAINING AGENT FOR CONCRETE

Air-entrained concrete is concrete in which microscopic spheres of air have been incorporated. Air entrainment with Ayr-Trap results in quality concrete of improved workability, easier placement and increased life especially when exposed to severe weather, wide temperature ranges or to the use of de-icing chemicals. Ayr-Trap is widely used in road building, in mass concrete construction and in manufactured concrete products.



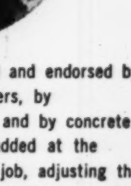


Rice Institute
Stadium
Houston, Texas

Ayr-Trap is specified, used and endorsed by concrete materials engineers, by ready-mix concrete plants and by concrete testing laboratories. Ayr-Trap is added at the batching plant or on the job, adjusting the dosage to furnish an air content of from 4 to 5.5%. The cost is nominal requiring only 2 to 3 liquid ounces of Ayr-Trap per cubic yard of concrete. Send for our treatise on Ayr-Trap and air-entrainment—it's important to have.

A. C. HORN CO., Inc. est. 1897

Manufacturers of materials for building maintenance and construction
LONG ISLAND CITY 1, N. Y. • Los Angeles • San Francisco • Houston
Chicago • Toronto SUBSIDIARY OF SUN CHEMICAL CORPORATION



ER 53

A. C. HORN COMPANY, INC.,
Long Island City 1, N. Y.
Please send me ☐ complete data on AYR-TRAP
HORN ☐ free copy of your 106-page Construction Data Handbook

NAME__________________ TITLE________

FIRM NAME______________________

ADDRESS________________________

CITY__________________ STATE________

ON OUTSTANDING JOBS ACROSS THE NATION

BARCO *is the Answer!*

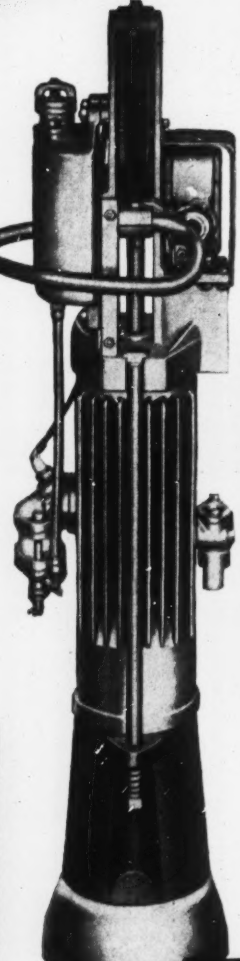
TEXAS DAM—On projects costing millions of dollars, it pays to use construction methods that insure permanence. That's why soil compaction is a very important factor in the construction of dams. This picture shows Barco Rammers working on the Whitney Dam Project on the Brazos River near Whitney, Texas. *Contractors:* L. P. Reed, Inc., and Martin & Grace, Inc., both of Clifton, Texas.

SOIL COMPACTION

is the key to *better construction* on important projects throughout the country —AND ON THESE JOBS, BARCO IS THE ANSWER!

Contractors and engineers, alike, are finding that unless soil is properly compacted during construction, settlement, erosion, and structural damage can easily develop in areas near abutments, foundations and walls, and other critical points.

This is where BARCO RAMMERS quickly pay for themselves! See for yourself—ask for a demonstration. *Send for our latest catalog and new "COST DATA" Bulletin.* BARCO MFG. CO., 1814C Winnemac Ave., Chicago 40, Ill. *In Canada:* The Holden Co., Ltd., Montreal, Canada.

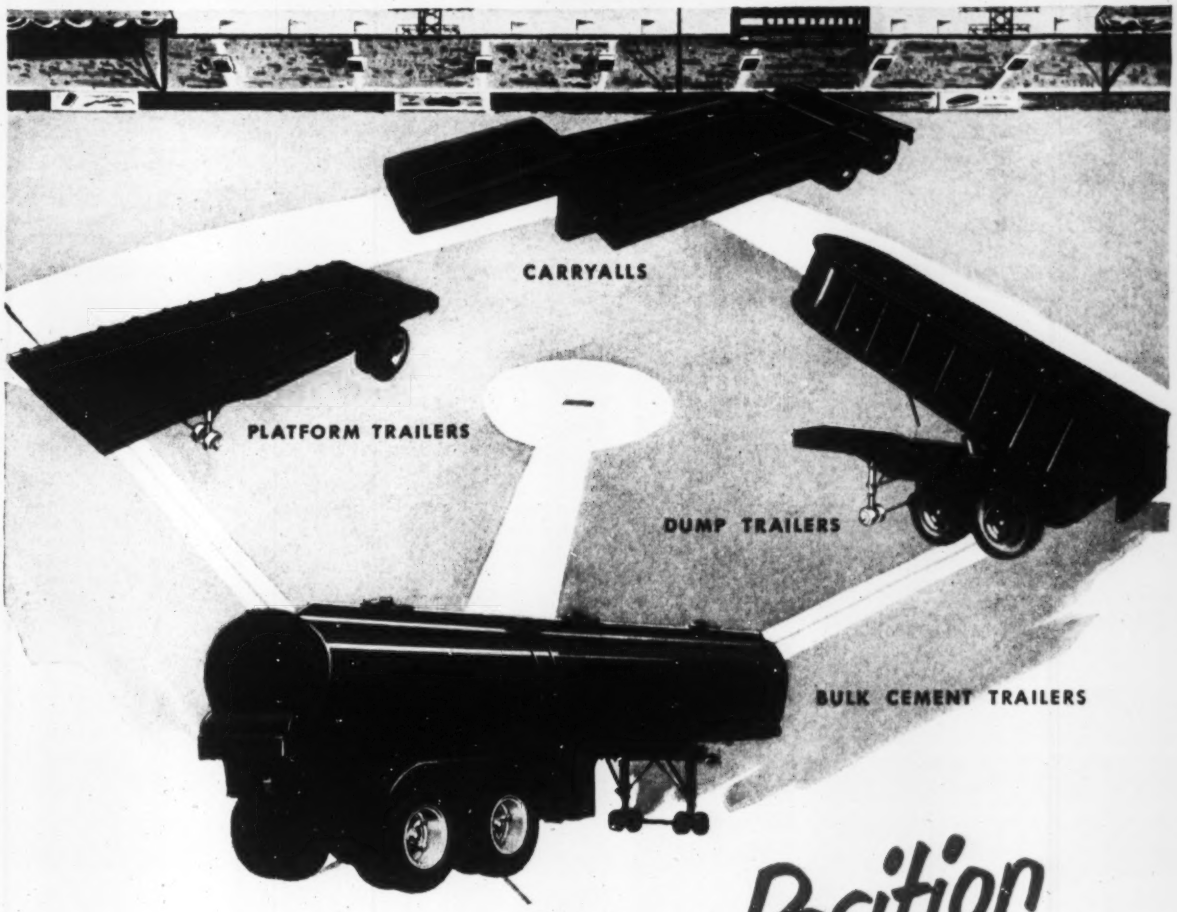


OHIO FACTORY BUILDING—The Austin Company recently attracted nation-wide attention with the design and construction of an ultra-modern plant for The Lincoln Electric Company in Cleveland, Ohio. Evidence of the high standards of construction maintained by The Austin Company can be seen in the use of Barco Rammers in the above picture. The Austin Company has many Rammers in use on building projects throughout the country.

MISSOURI HIGHWAY—The State of Missouri has been one of the leaders in studying the value and importance of soil compaction on highway construction for preventing settling, washouts, and erosion. This picture shows Barco Rammers used by Fred Weber Contractors, Inc., St. Louis, on Missouri's famed *Natural Bridge Road.*

BARCO
"Pegson" Gasoline
RAMMER

For Soil Compaction Close to Walls, Culverts and Abutments — in Trenches, Ditches



Stars At Every Position

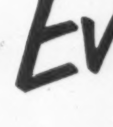
★ ★ ★ ★

FRUEHAUF
Trailers
"ENGINEERED TRANSPORTATION"

FRUEHAUF VERSATILITY is no accident. It is the logical result of long years of practical experience with the hauling problems of American business. In the construction field, as in other fields, Fruehauf's extra know-how pays off in jobs done faster, better, for lower cost.

Yes, you'll find Fruehaufs will build profits for your business. Only Fruehauf provides the important service-economy feature of a *complete Trailer line* with many interchangeable parts. Only Fruehauf gives you the added protection of *nationwide factory service facilities* for readily available maintenance and repairs. Remember, Fruehauf has built more Truck-Trailers than any other manufacturer in the world. Built by Fruehauf means quality-built.

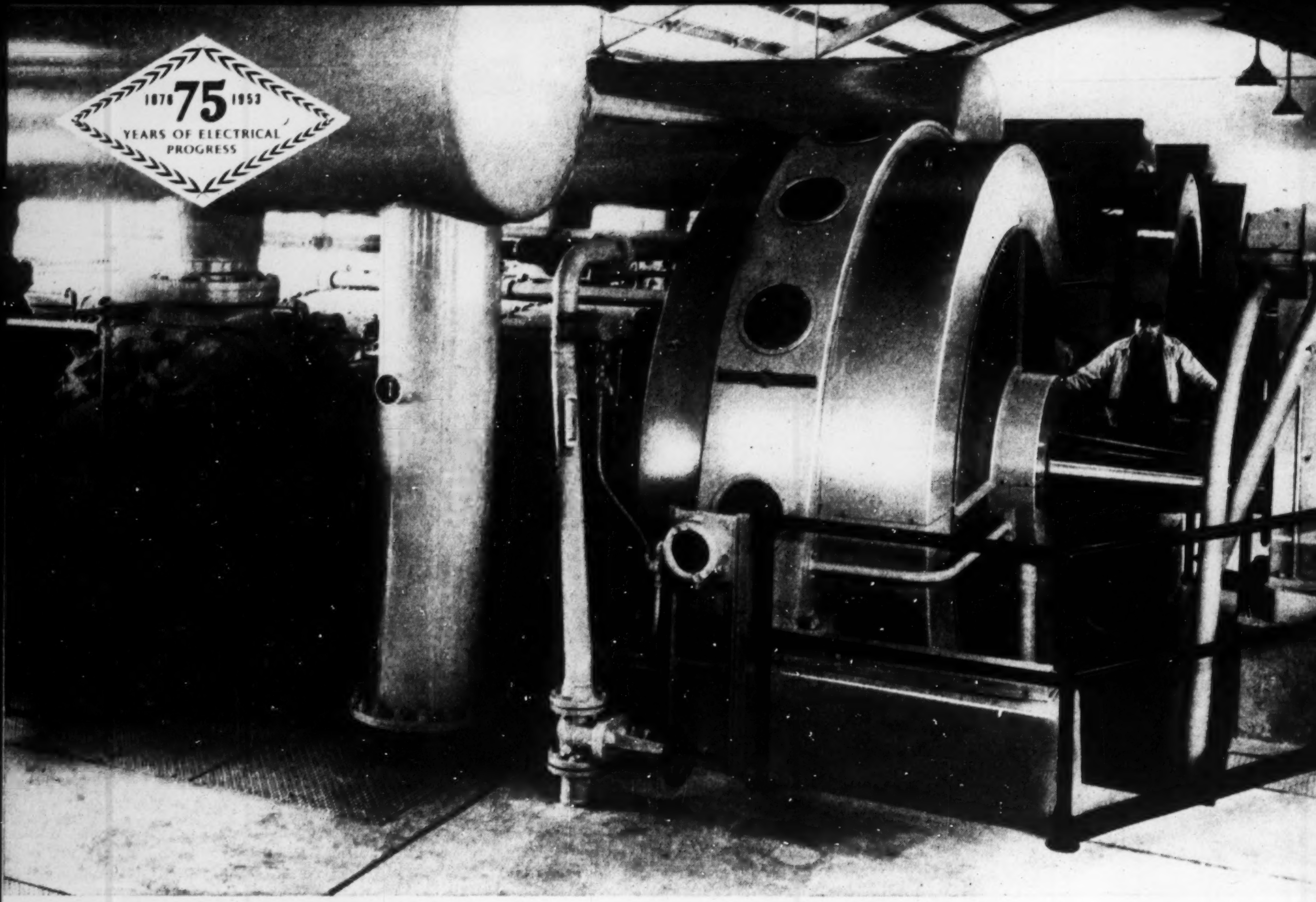
WRITE TODAY for your free copy of the 1953 Fruehauf catalog. You'll find complete illustrations and specifications.



World's Largest Builder of Truck-Trailers

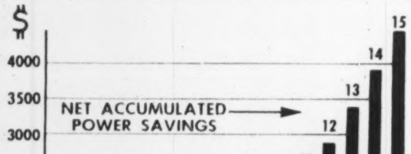
FRUEHAUF TRAILER COMPANY

DETROIT 32, MICHIGAN



COMPRESSORS IN A GAS STORAGE STATION are driven by General Electric 3000 hp, 300 rpm synchronous motors.

Can synchronous motors cut



OPERATING SAVINGS on the synchronous motor application described above are shown over a period of twenty years. Extra first cost will be amortized in five years; savings will continue for many more.

Here's how one plant saves with a G-E Synchronous Motor

The specifications for a new pump motor were 250 hp, 600 rpm, 2300 volts, 3 phase, 60 cycle. The price of a 1.0 Power Factor synchronous motor, including exciter and control, was higher than an equivalent squirrel-cage induction motor with control. However, the synchronous motor efficiency, including exciter loss, was 1.6% higher than the induction motor (93.0% vs 91.4%). Since the motor was to operate continuously at a power cost of 11 mils per kilowatt-hour, it was found that the power savings would repay the additional investment in only five years. The operating savings will continue throughout the life of the motor—10, 20, even 30 years.

Savings such as these make synchronous motors the most economical drive for many heavy-duty, continuous-service applications. And in many cases, synchronous motors are lowest in first cost, too.

GENERAL ELECTRIC 400 HP SYNCHRONOUS MOTORS are coupled to ten Jordans in a paper mill.

your plant's operating costs?

Greater Efficiency on Large, Constant-Speed Applications Can Lower Power Costs Substantially

On certain applications selection of General Electric synchronous motors can bring about substantial savings in plant operating costs. Synchronous motors usually have a higher full-load efficiency than any other type of motor, produce more work per dollar's worth of power consumed.

Furthermore, synchronous motors may be able to improve plant power factor—the ratio of total kilowatt load to total kva load. When these two fall out of balance, high system losses, high power bills, or increased maintenance costs commonly result. Using a *unity power factor* synchronous motor adds only to total kw load. And, a *leading power factor* synchronous motor will actually supply reactive kva's to your system, while operating at its normal rated output.

Before you select a drive for a large piece of equipment providing heavy and continuous service, be sure to investigate the economics of General Electric synchronous motors. Call in your G-E representative—he'll be glad to discuss your situation with you. Also, information on G-E synchronous motors and their application is available in the following bulletins: GEA-5332, "Low-Speed Synchronous Motors;" GEA-5426, "High-Speed Synchronous Motors;" GEA-5817, "Plant Power Factor Improved With G-E Synchronous Motors." Write to Section 770-27, General Electric Company, Schenectady 5, N. Y.

GENERAL ELECTRIC

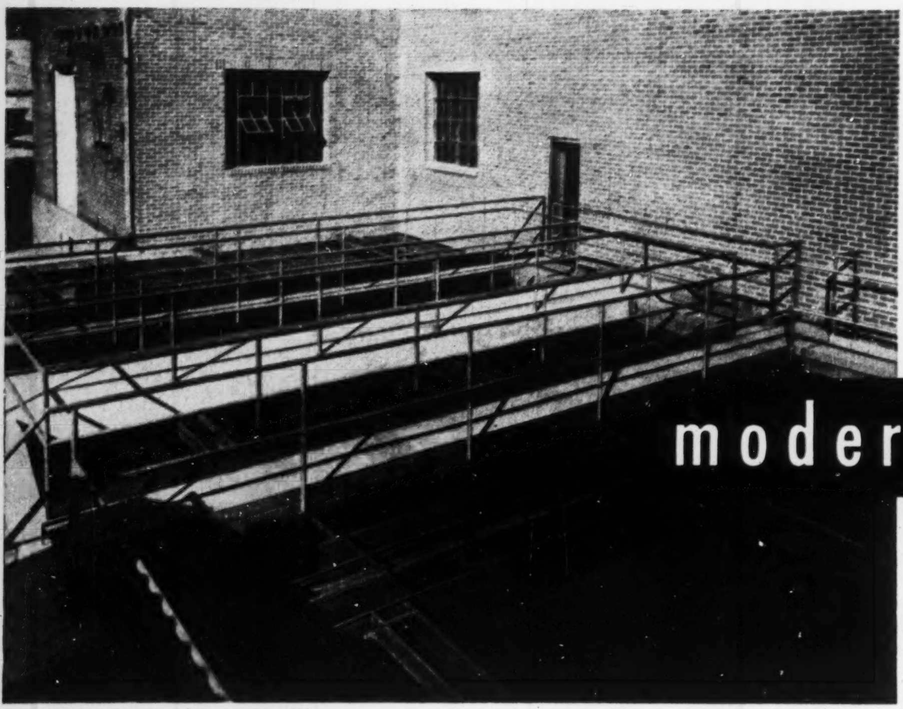


Photo courtesy City of North Kansas City, Missouri

HOW NORTH KANSAS CITY modernized ITS IRON REMOVAL PLANT

To *triple* the 1912 rate of an old-fashioned settling basin and two filters could be a problem—and quite expensive.

Consulting Engineer Charles A. Haskins, solved it very economically. Two compact, modern Permutit Precipitators were built into the *old* settling basin. Operating on the highly efficient sludge-blanket principle, these Permutit Precipitators assure maximum operating economy.

The results of this modernization—detailed in the table below—speak for themselves:

- Total Iron reduced from 5.0 to 0.1 ppm.
- Manganese reduced from 0.2 ppm to essentially zero.
- Turbidity reduced from 50 to only 3 ppm—permits 19 hour per day filter runs with washing only once every 5 days!
- Hardness reduced to level desired.

For full details on the Precipitator write to The Permutit Company, Dept. ENR-2, 330 West 42 St., New York 36, N. Y., or to Permutit Company of Canada, Ltd., 6975 Jeanne Mance St., Montreal.

Water Analysis Report Before and After Conditioning

			PPM as	Raw Water from wells before aeration	Precipitator effluent (unfiltered)
CATIONS	Calcium ....(Ca++)		$CaCO_3$	145	55
	Magnesium ....(Mg++)		$CaCO_3$	103	75
	Sodium ....(Na+)		$CaCO_3$	108	105
ANIONS	Bicarbonate	Alkalinity	(HCO₃—) $CaCO_3$	190	42
	Carbonate		(CO₃——) $CaCO_3$	0	24
	Hydroxide		(OH—) $CaCO_3$	0	0
	Chloride ....(Cl—)		$CaCO_3$	35	35
	Sulfate ....(SO₄——)		$CaCO_3$	146	139
	Total Hardness..................		$CaCO_3$	248	130
	Alkalinity A (Methyl Orange)		$CaCO_3$	190	66
	Alkalinity B (Phenolphthalein)......		$CaCO_3$	0	12
	Free Carbon Dioxide.............		CO_2	16	0
	IRON (total)......................		Fe	5.0	0.1
	Silica..............................		SiO_2	16.8	13.0
	MANGANESE		Mn	0.2	0.0
	TURBIDITY (after shaking)........			50	3
	Fluorides..........................		F	0.5	0.4
	Color..............................			Turbid	5
	pH.................................			7.3	9.5
	Total Hardness (as $CaCO_3$).......		Result in grains per U. S. Gal.	15	7.6

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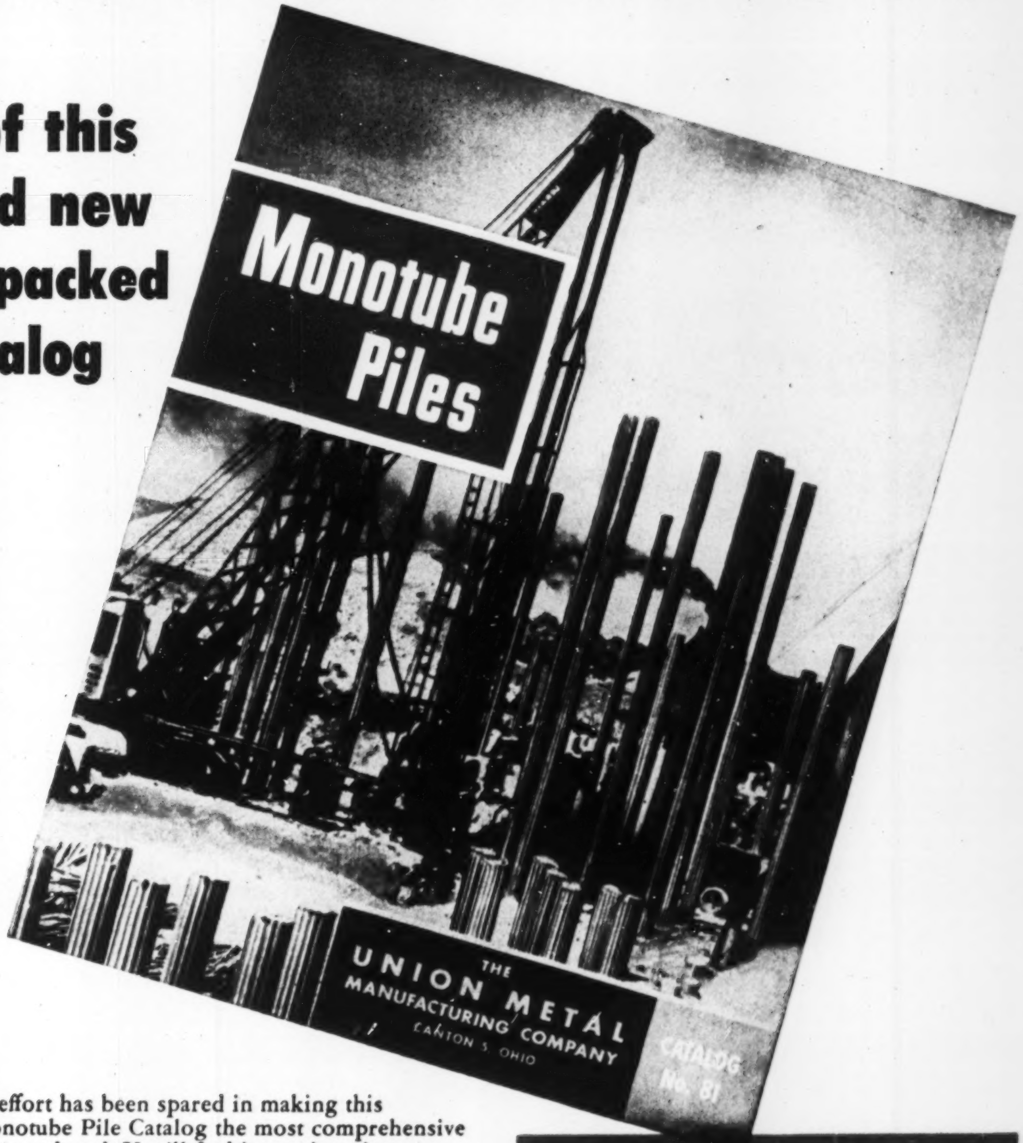
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CATALOG
No. 81

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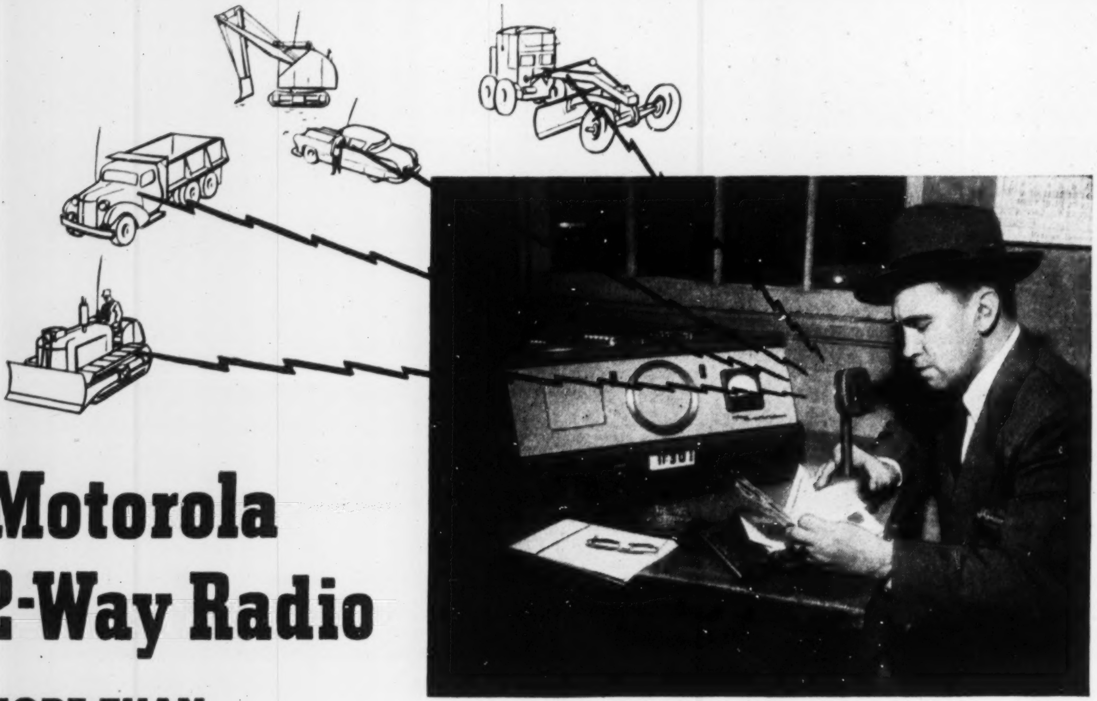

Motorola 2-Way Radio

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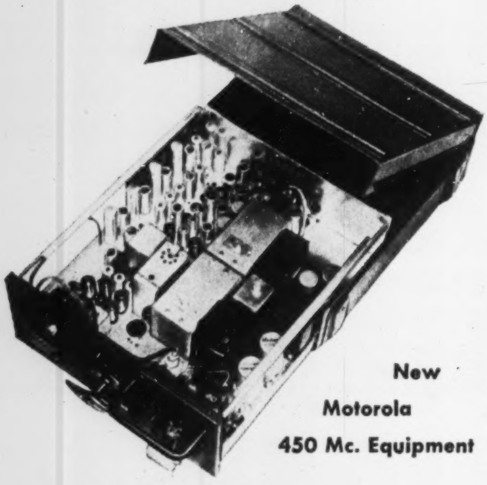

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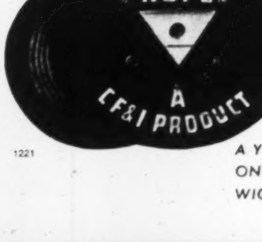

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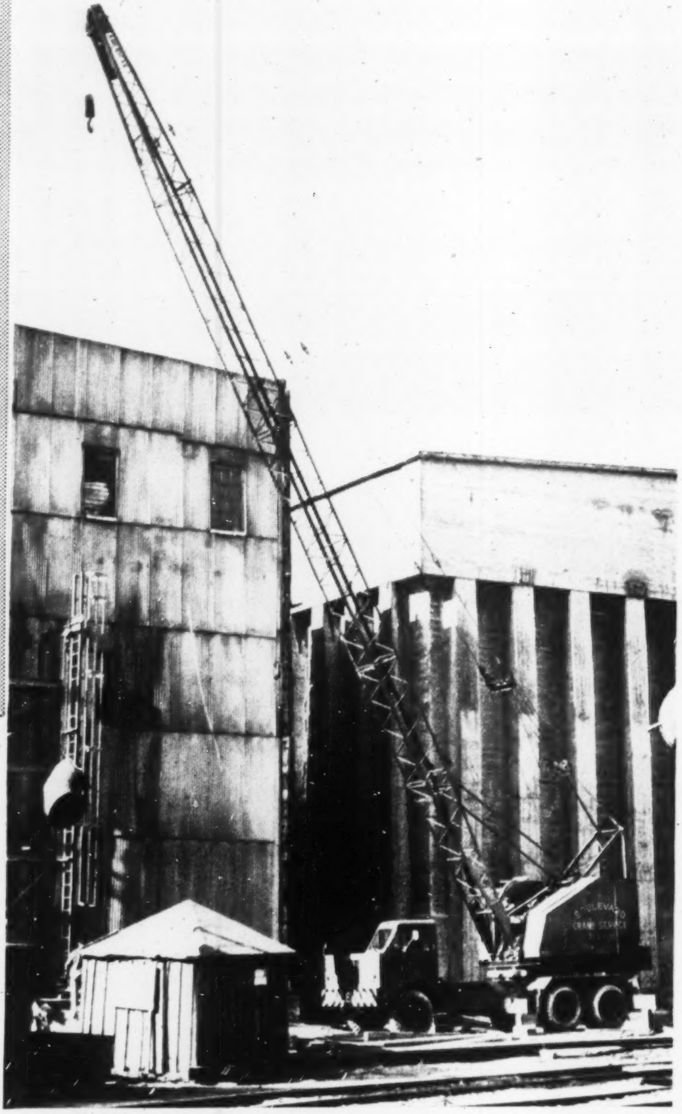
Pictures from Industry

These are excerpts from stories in the current issue of American Hoist & Derrick Company's house magazine, the American Crosby Clipper. If your business involves the use of hoists, derricks, locomotive cranes, revolver cranes, Crosby Clips or other equipment in our line, why not let us put your name on the mailing list. Use coupon on right hand page, to start with the current issue.

CROSBY CLIPPER



"Fetch me that skyhook" was once a straight-face gag that mechanics loved to pull on green youngsters. But the 85-foot boom on this new American 375 Truck Crane makes the skyhook seem nearly a reality. Here, Boulevard Crane Service of Detroit is installing equipment at the top level of an industrial plant.

Philadelphians planned a fine new Mercantile Branch of their free library for this location; so they wanted the site cleaned out at top speed. Contractor Robert Hawthorne, Inc., whose slogan is "Your Dirt is Our Money", used a new American 375 Crawler Crane to do the job in a hurry.

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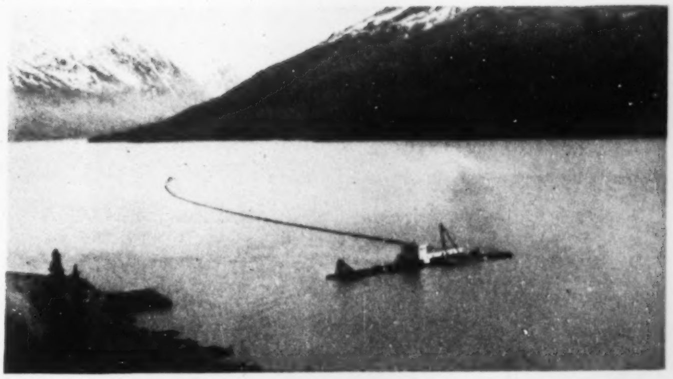
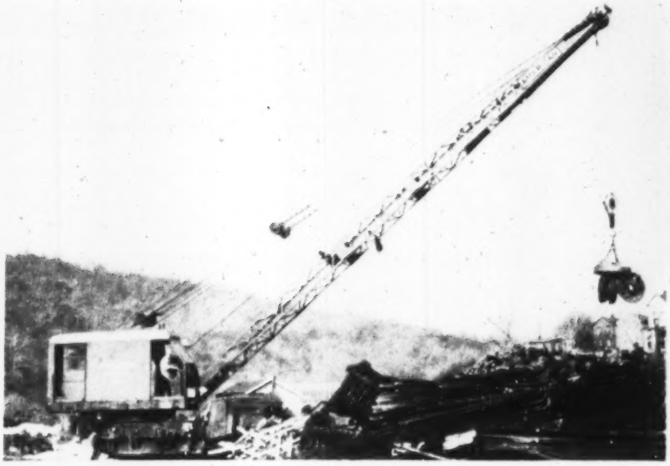
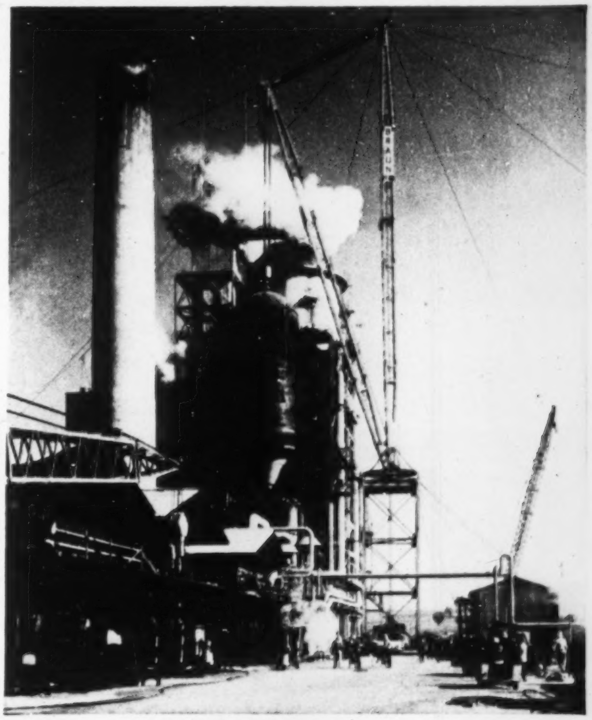


Hauling the "Skookum" over icy trails to Lake Eklutna, deep in Alaska, would have been an impossible job. But men who planned the project had an idea. Bethlehem Pacific Coast Steel Corporation, built this 183-ft. dredge in sections, and the pieces were assembled at Lake Eklutna. Three American Hoists were used in the dredge. One handles the 100-ft. digging ladder, two others swing the barge sideward as needed. Photo at left shows a miniature model.

When you don't read news about steel shortages, give thanks to the huge, efficient U. S. scrap industry — including the Max Solomon Company in Pittsburgh. For high-speed, low-cost scrap handling, the pride of the Solomon yards today is this American 25-ton Diesel Locomotive Crane.





Even hard-boiled riggers stopped to watch, as this new 200-ton reactor unit was installed in a California cracking plant by C. F. Braun & Co. Read the fascinating details of the job — handled with an American Guy Derrick — in the current issue of the Crosby Clipper.

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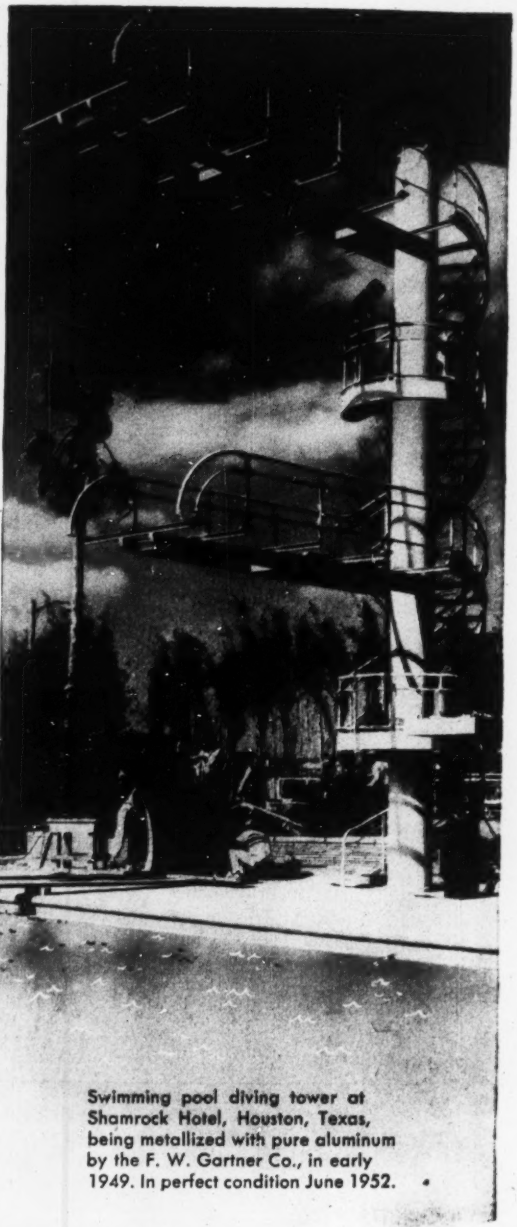

Swimming pool diving tower at Shamrock Hotel, Houston, Texas, being metallized with pure aluminum by the F. W. Gartner Co., in early 1949. In perfect condition June 1952.

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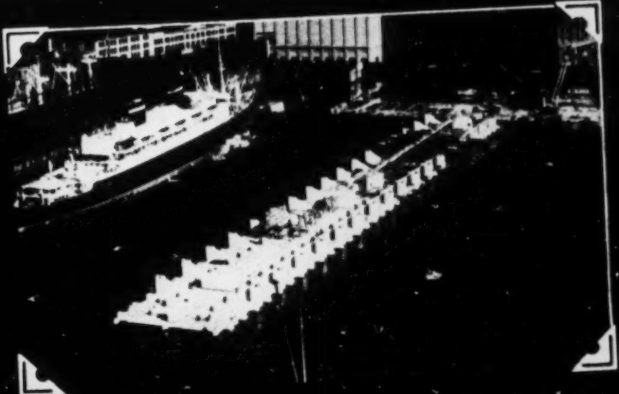
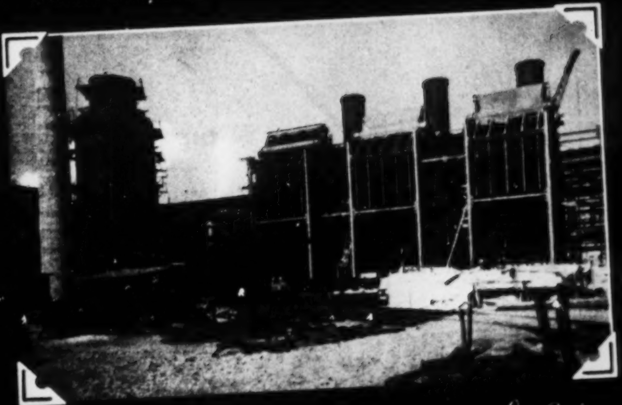
A Page from our Album of Construction "Firsts"

First Streptomycin plant in the world for Merck Chemical Co at Elkton, Va



Pier 57, New York City, world's largest "pontoon type" pier (a joint venture with another contractor)

Delaware Memorial Bridge river piers required record-size caisson, world's largest pour of tremie concrete



Outdoor boiler plant for Texas Company at Port Arthur Texas, was largest in the U.S. when built

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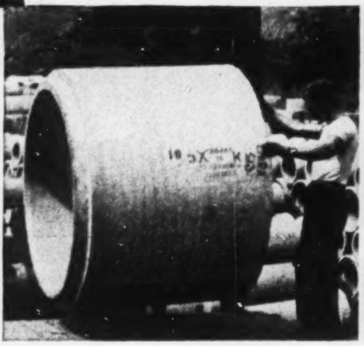

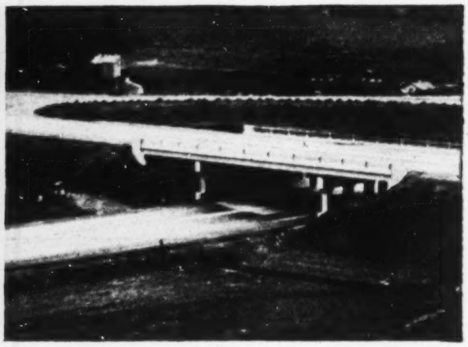

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ENR-D-121RR

THE CONSTRUCTION WEEK

- **Piracy due?**—Government labor people were making some dire predictions about the effect of dropping wage and salary controls—and the direst was that labor piracy might reappear in the construction trades.

  There was no evidence this week to support the prediction. In fact, labor leaders generally were cheering the dropping of controls (see also p. 226). But what the predictors had in mind was labor-short areas such as those in Pike County, Ohio, where AEC suddenly decided to build a $2-billion plant. In those areas —where local unions are weak or non-existent—the push on cost-plus contractors may encourage them to grab labor from anywhere in order to get their work done satisfactorily.

- **Who works for whom?**—Pennsylvania's licensed professional engineers have high hopes that the current legislature will unscramble an interpretation of the state's licensing laws that would seem to confine engineers to working for private enterprise.

  The state's Department of Public Instruction, in defining the practice of engineering, has held that projects developed by engineers be used "in or devoted to private enterprises or uses." A bill to remove this phrase from the definition is now up for legislative consideration.

- **Too much money?**—The trouble seems to be, commented New York's Cooper Union School of Engineering somewhat wryly, that evening engineering students are making so much money that it's getting tougher to attract good men to teach their classes.

  A survey showed that the average evening engineering student at Cooper makes $4,214 annually. And that's 8% more than he made a year ago, 30% over two years ago. Civil engineering students are found to be averaging about $4,116 a year.

  Trouble is that men who might serve as instructors are making a lot more money (like their prospective students) than they could possibly get for night-school instructorships.

  A suggested solution: Possibly industry should return to some sort of a lend-lease basis, some of the highly qualified men it has attracted, to help the schools out on the problem.

- **New town for Peru**—Utah Construction Co. has confirmed that it has the contract for designing that $100-million Copper mining project (including a new town for workers, community facilities, transport) that's been in the rumor stage in Peru for some time.

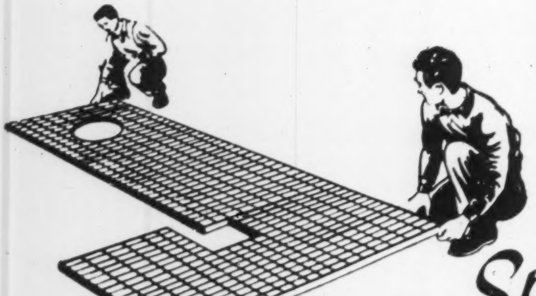
  The development is known as Toquepala, 400 mi south of Lima, and will be built for American Smelting and Refining Co. Utah will do part of the design, (some of which will be done by ASR engineers) and coordinate all engineering for the job.

- **Tax problem**—With a very specific matter in mind, the American Municipal Association placed a fresh set of problems on the administration's doorstep in Washington last week.

  What's bothering the cities is this: New defense plants are fine—they mean construction, and work for citizens, but the fact that the plants hold government contracts exempts them from local taxation.

  As a result of this local tax exemption there is a further strain on already-tottering city financial structures to supply community services and the like. The cities want more than "some" federal help (in the matter of schools)—to take care of water supply, sanitation, police, fire protection.

  They also want federal road-tax revenues spent on roads, in the cities, where worst bottlenecks appear.



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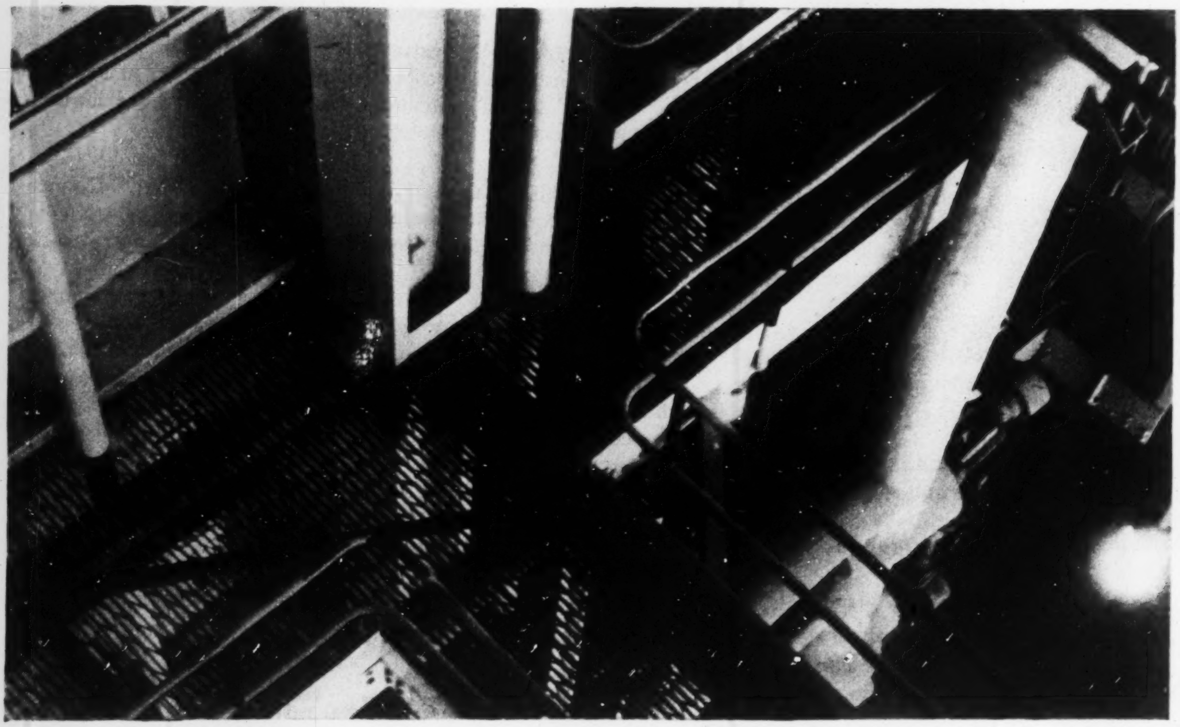

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FEBRUARY 19, 1953
VOL. 150, NO. 8

ENGINEERING
NEWS-RECORD

Budget order deals lightly with federal civil works

Non-defense construction agencies are subject to less strict re-examination; no holdup on contract awards

Civil works of the federal government are going to be less affected than military public works by the Eisenhower-Dodge economy order.

That prospect began to emerge last week as the government's civil construction agencies moved cautiously and carefully into the job of carrying out the White House-Budget instructions. The Defense Department had shown no such hesitation the previous week in issuing a directive stopping all new contract awards for military and Naval public works until the projects have been cleared by the Secretary (ENR Feb. 12, p. 21).

As noted then, the economy order applies no stoppage or slowdown in contract awards by state and local agencies for projects that are financed in part by federal aid. Where federal money has been allotted to a state or local agency, that agency retains untrammeled power to obligate the money by award of construction contracts. There will be no interference with the awarding schedules of state and local units for federally aided highways, hospitals, schools, community facilities and low-rent public housing.

• Directives are broad—Civil works of the federal government are not equally free to proceed. They must abide by the Feb. 3 letter from Budget Director Joseph M. Dodge; but that letter required no holdup in contract awards—awards such as Defense Secretary Charles E. Wilson called for in his directive to the military services three days later.

Budget Director Dodge laid down a required course of action for every department head. But he established no definitive criteria for the construction agencies in determining what work should be curtailed, suspended or postponed.

Here are the broad Dodge directives as spelled out in his letter:

- Proceed only with those projects that are clearly essential, and on such projects employ the strictest standards of economy.
- Review all proposed or authorized construction on which work has not yet begun; propose construction for the rest of this year and until June 30, 1955 only if the projects are "clearly essential."
- Stop construction, slow down or reschedule any project already under way if need be to conform with the "clearly essential" policy.
- Eliminate unnecessary programs, question all work in this light, and above all do not permit increase over the January rate of obligations except on complete justification and specific approval unless some law specifically requires it.
- Review all programs preparatory to making recommendations for revising Truman's 1954 fiscal year budget downward. These recommendations for economy must be in the hands of the Budget Director by March 2.

• No blanket stop orders—Those are the broad instructions with which department heads and their budgeting staffs are now wrestling. Without exception, the construction agencies are making a tight review of all work under way or scheduled for award. But, so far as could be learned at week's end, none of the agencies plans anything so drastic as a blanket stop-order on construction awards.

With rare exceptions, awards apparently will be made just about on schedule. The only obstacle would be one cryptic directive in the Dodge letter: To "permit no increases over the January rate obligations except on complete justification and specific approval, unless such increases are clearly necessary to meet requirements fixed by law."

Federal bid-shopping

An early hearing is expected on a revised version of the bid-shopping bill introduced in the last session of Congress by Sen. Harley Kilgore (ENR May 8, 1952, p. 22). The principal change in the bill is that it would prevent general contractors from doing any of the mechanical specialty work on cost-plus contracts for which they had no previous experience. The bill also would reduce incentive for bid-shopping by requiring contractors to repay the government any savings on subcontracting on lump-sum contracts.

• January rate considered—The January rate of obligations for all departments and agencies is not immediately available. But many department people think the January rate was high enough for them to live within it for five months—without dislocating their planned programs beyond repair.

Even if the construction agency for each department has to hold down its rate of construction awards to the January level, the effect would not be too severe outside of the military and Naval public works programs. Those programs, of course, would be seriously handicapped.

Even in the Department of the Army, the civil works of the Corps of Engineers escape the drastic holdup ordered by Defense Secretary Wilson. Secretary of the Army Robert T. Stevens has instructed the Corps to make a close study of all projects to determine whether any can be stretched out or postponed to reduce federal spending in the current fiscal year and in fiscal 1954 that starts July 1. At the same time, the Corps is making a microscopic survey of its organization to see if administrative expenses can be cut.

• Fine tooth comb needed—As for every other construction agency, the Corps faces a tough problem in trying to eliminate projects that Congress has authorized money to build. These projects have been studied, examined, debated, so many times that it will take a gimlet eye to find a flaw in any job that would make the work non-essential.

And the howl that will go up from local residents deprived of a promised project won't make a pleasant sound in the Army Engineers' offices or in the halls of Congress.

But—like the other civil construction agencies—the Army Engineers have to do something to show that they are strongly in accord with the new administration's economy directive. If they cannot come up with a saving of say 5% by the time they turn in their report to the Budget Director on March 2 or before, the report will probably go back to them for further skinning.

That—at least—is the personal opinion of some public works people in the federal government. The Budget Bureau last week had no known intention of requiring fixed percentage cuts by the various departments or their construction agencies. But Director Dodge is not expected to rest content with any report that doesn't promise a measurable cutdown for fiscal '54.

• **No drastic Interior order**—An even better example of the conservative approach being taken by the civil works agencies is that of the Interior Department. Secretary Douglas McKay states flatly that Interior will issue no such drastic implementing order as that put out by Defense Secretary Wilson. "No work will be stopped," says McKay.

McKay wrote the first draft of instructions to the many construction units of his department early last week. It was then up to his top department staff to put the order in shape for general distribution. Up to Thursday morning, the draft had not yet filtered down to the department's budget officer for his comments.

• **AEC cutback unlikely**—Next to the military, the Atomic Energy Commission is the government's biggest construction buyer. Like other construction agencies, AEC has exhaustively examined and reviewed its expansion program internally and in off-the-record testimony before congressional committees. AEC considers all its construction projects essential. Cutting them back is a tough task.

• **TVA being screened**—In other civil works agencies of the federal government, the economy moves are expected to follow similar lines. The Public Buildings Service of the General Services Administration is making a close review of all its work, including even its repair jobs. PBS has an insignificant construction budget of its own. Its big jobs are being built for government units in other departments like Commerce and the Federal Security Agency. If cuts are to be made, the decision will have to come from the departments for which PBS serves as design and construction agent.

Another agency that does have a big construction program is also going through a tight re-screening of its projects. That is the Tennessee Valley Authority. TVA builds its jobs by force account with its own construction department. But it lets big contracts for equipment to go into its new steam-electric plants.

Controls virtually ended for construction industry

Contractors are given open-end CMP until June 30; ceilings remain on some materials and equipment

A wave of decontrol hit builders and the building-materials industries late last week—and the prospect is for more to come soon.

• Contractors and builders are out from under price controls—but many building materials and much construction machinery equipment are still under ceilings.

• The Office of Defense Mobilization "open-ended" the Controlled Materials Plan. Now a contractor can buy steel, copper, and aluminum in excess of his regular allotments if he can find a mill to supply him. Conversely, the mill can sell to any customer as soon as CMP orders on the books have been filled. Previously, as additional mill space developed, producers were unable to sell unless customers were issued supplemental allotments by the National Production Authority.

Actually, decontrol is moving so fast that construction industry officials in the regulatory agencies haven't been able to keep up with developments.

• **Price decontrols itemized**—Best word available on price decontrol for contractors was contained in a statement issued by Price Stabilizer Joseph H. Freehill. These are decontrolled:

"Construction services covered by CPR 93, including any transaction in which the seller furnished labor service, or any combination of labor, materials and services under contract for building, highway, heavy railroad and miscellaneous construction. (Not included are transactions under CPR 156 covering fabricators of structural steel, miscellaneous and ornamental iron, and vessel shop products for field assembly or erection.)"

Another section of the decontrol statement was directed specifically at prefabricated structures. It said:

"Sales of prefabricated structures, when made predominately of wood or metal, designed as shelters for persons, animals or goods, and as shelters for commercial and industrial activities, but not including fabricated steel industrial erections or installations. The term prefabricated structure applies to parts and components fabricated in a factory in such form that construction and erection of the material into a predesigned structure requires merely the assembling and uniting of the standardized parts and components at the construction site."

• **Must keep records**—Contractors and builders aren't completely out from under, in at least one respect. According to regulations, you are still required to keep for at least two years the records which you had to keep during the time controls were in effect.

Some of the building materials decontrolled last week include:

All rubber products, castings and forgings, paints, varnishes, and lacquers, rental charges for machinery and equipment, soaps, cleansers, and detergents, petroleum and petroleum products including asphalt—but—excepting household heating oil.

On the other hand controls still remained—as of last Friday—on copper, steel, aluminum, and cement, and a wide variety of basic commodities and materials. Also most items of machinery and equipment—including construction machinery and equipment—are still under price ceilings.

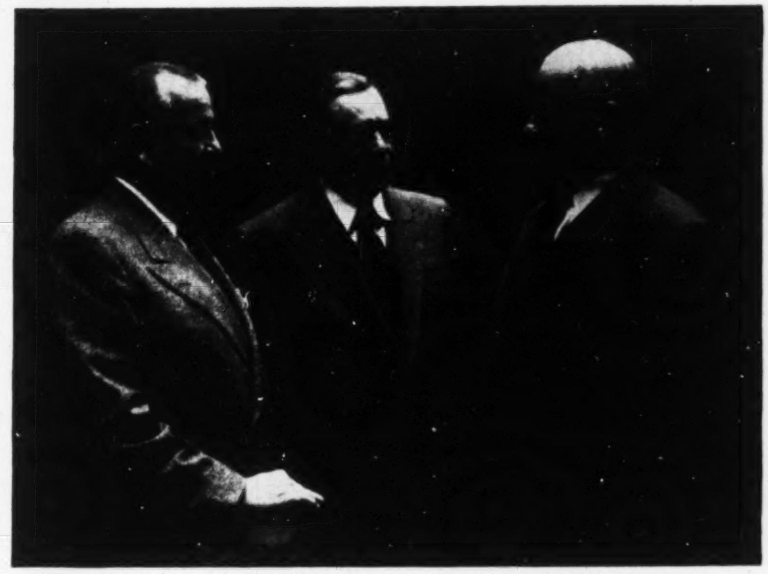
• **Playing by ear**—The confused situation on decontrol, however, is illustrated by the fact that window glass was decontrolled last Friday—while ceilings were still kept on such items as glass brick and plate glass.

Actually, price control officials are playing decontrol by ear—removing controls as fast as they can from items selling under ceiling, or those that contribute little to the cost of living, or commodities that might be withheld from the market if controls were not removed.

The end of all price controls seems certain for April 30—although there is evidence that the Eisenhower Administration may be taking a second look at stand-by controls. Eisenhower in his message to Congress specifically avoided asking for such standby legislation when the present law ends.

Want local control

The National Association of Soil Conservation Districts, meeting in Omaha, Neb., last week, recommended placing all soil and water conservation activities under a single agency of the Department of Agriculture. As part of its proposed federal legislative program, the association also suggested giving the nation's soil conservation districts local management of all programs. Walter S. Davis, Jr., was reelected to a fourth term as president.



THREE R'S OF ARBA—Robert Reindollar, new president, and Eugene Reybold, executive vice-president, take counsel with Paul Reinhold, the retiring president.

GOOD PROSPECTS for more equipment, fewer troubles with materials bring smiles to Julien Steelman (Koehring Co.) and Harald Reishus (International Harvester), retiring president and new president of Construction Equipment Manufacturers' Assn.

More money for road financing may come from new drives against diversion

ARBA hears high-placed officials urge federal gas tax be used for roads. Equipment adequate, manpower short

Road taxes for roads emerged as the single most significant theme of the annual meeting of the American Road Builders Assn. in Boston last week. It was not planned that way, and the program gave no clue that both the federal government and the 26 states that divert highway tax revenues to other than highway uses would be roundly criticized and urged to stop the practice.

The urging came from high places and, in at least one instance, had powerful connotations. This was when U. S. Senator Edward Martin, the new chairman of the Senate Public Works Committee, said that "no part of the gasoline taxes should be diverted into the general fund, and the federal government should withdraw from the field of gasoline taxation as soon as may be consistent with the needs of national defense."

• Use of federal funds—Senator Martin's views were echoed in a paper by Charles M. Ziegler of Michigan, president of the American Association of State Highway Officials, who put forward another proposal: The federal government should reduce excise taxes, continue to collect gasoline taxes if it wishes, but divide all of its proceeds among the states for use on the national defense highway system. In addition, present federal aid funds should continue to be available to the states on a matching basis.

The third supporter of the idea of road taxes for roads was Brig. Gen. Paul F. Yount, deputy chief of transportation, U. S. Army, who urged that the present method of apportioning federal funds be revised to insure fast completion of the national defense road system to standards that will meet the needs of increasingly heavy military equipment. Bridges are particularly deficient, he noted, as are also widths and sight distances in many places. He urged more widespread use of limited access design on the primary system, and a general raising of standards of design on all rural roads.

Powerful assurance that at least there will be no reduction in present federal funds for highways as a result of the current survey of project essentiality in Washington came from Congressman Jesse Wolcott, chairman of the House Banking and Currency Committee. And he supported the views reported above to the extent of stating some new and additional form of federal assistance for roads was definitely in the planning of the present administration.

• Expressways and toll roads—Why more money is needed for roads and how some states are managing to get it were highlighted further by other speakers. Wilfred Owen of the University of Pennsylvania's Institute of Urban Studies emphasized the shift of the traffic problem from the rural to the metropolitan areas where costs run from several to many millions of dollars per mile. Half of the nation's traffic is in such metropolitan areas, but only 29% of the motor taxes are spent there, he pointed out.

Massachusetts is meeting the problem by a great 10-yr rebuilding program charted in 1948, which plans the expenditure of $1 billion divided equally between rural areas and metropolitan Boston. Since that time, bond issues totaling $400 million have been

(*Continued on page 46*)

National water conservation group proposes home rule legislation

Legislation enabling state or local interests to take over TVA and other federal government-built water resource facilities was urged by the National Water Conservation Conference at its convention in St. Louis last week.

The organization approved a 21-point program proposed by its Land and Water Policy Committee headed by James H. Allen, civil engineer secretary of the conference and long-time executive secretary of the Interstate Commission on the Delaware River Basin (Incodel).

The committee said it would revise its report on the basis of comment and criticism by "grassroots water interest" of the country received by June 1, 1953. Formal legislative proposals are to be worked out at a later conference.

• Federal law changes asked—In approving the report, delegates said it should be national policy to "afford states and local interests or groups of states through interstate compacts the opportunity to operate and maintain and to acquire title on a fair and equitable basis to water resources development works constructed by the federal government."

It was recommended that the Federal Power act be amended: "So that neither a state nor a state agency, nor any public entity created under state law, shall be required to file with the Federal Power Commission a declaration of intention to construct a dam across a navigable stream unless the Department of Defense shall have determined first that such structure will materially and adversely affect actual navigation of the stream. Such . . . license . . . shall contain no provision for the taking over, or the recapture by the federal government of such publicly-owned licensed project.

• Federal subsidy opposed—The report flatly opposed any subsidy by the federal government in the development and transmission of hydroelectric power. It said sale of power from a federal project should be "not less than required to return to the government, in not to exceed 50 years from the date such power is available for sale, the total financial costs of the project allocated to power."

More money for road financing . . .

sold, to be financed by increases in the gas tax that so far have raised it from 3¢ to 5¢ per gallon.

The program envisages ring roads around Boston's business district and 11 mi farther out around the city itself. On the latter, 48 mi have been completed (ENR Feb. 28, '52, p. 96) and 30 additional miles are in the design stage. Radial roads through these rings will extend to the state's boundaries, and some of these are already under way. All of these new roads will be of limited-access type.

This outstanding prgram was outlined by John McCloskey, executive assistant, Massachusetts Department of Public Works, who also revealed that preliminary studies are well along by the Massachusetts Turnpike Authority for a 120-mi toll road entirely across the state to connect with the New York Thruway. Howard, Needles, Tammen and Bergendoff, consulting engineers, New York, are carrying out the studies. Such a toll road, it is believed, will usefully supplement the free, bond-issue roads and help carry the financial burden.

• Plenty of equipment—There should be no shortage of construction equipment during 1953. During 1952 the manufacturers turned out about $2.1-billion worth of equipment. Estimates are that the total for 1953 will be on the order of $2.3 billion. On the basis of the best recent year, this represents operations at about 85% of capacity. Moreover, capacity has been increased meanwhile, and in 1953 the military "take" will be more nearly 10% than the 20% to 25% of the past year. The military actually will require only about 5% instead of 20% of the erstwhile critical crawler tractors of Class 1 and 2 and about the same percentage of shovels and cranes, which have been short for civilian supply.

Boyd S. Oberlink, director of the NPA division that handles construction equipment, offered these predictions but carefully avoided any prophecy as to when or whether materials controls would come off. He did point out that only about 6% of production in 1953 would be on rated orders for the military.

• But not enough engineers—As to highway engineers, the prospect is that demand will exceed supply. Because of inadequate salary scales, the shortage of engineers probably is worse in the highway field than in any other, according to several speakers on the program. Grave doubts were expressed that available manpower would be sufficient to handle any greatly expanded program.

As a consequence of this situation, the ARBA adopted a resolution to support and promote measures to relieve the highway personnel shortage. Prepared by the committee on educational programs of the association's Contractors Division, the resolution urges the upgrading of salaries, wider use of consulting engineers by highway departments, the training of sub-professional employees of highway departments, and a larger number of highway short-schools such as those sponsored by several colleges.

• Technical trends—Most of the technical papers (and some thirty were on the program) were concerned with reporting experiences on various types of road work, but from them several trends that may have broad meaning were evident. Soil stabilization with mixtures of lime and fly ash is showing good results. Experiments with powdered and plasticized rubber in bituminous pavements indicate that greater stability of surfaces may result. The use of granular material for subgrades under concrete slabs is a sure way to reduce or eliminate pumping of the subgrade under the action of heavy traffic. Much greater practical use is being made of soil mechanics technology as evidenced by the fact that there are 1,146 full time engineers now employed on this type of work by the state highway departments as compared with only about half that number three years ago. Both thickened edge concrete pavements and the use of transverse expansion joints are on the wane.

• New officers—The new president of the ARBA will be Robert M. Reindollar, long with the Maryland State Roads Commission and now a consulting engineer in Baltimore. He succeeds Paul B. Reinhold, president of the Atlas Equipment Corp. of Pittsburgh. New regional vice-presidents are Charles M. Noble, chief engineer, New Jersey Turnpike Authority; W. G. Pruett, highway director of Alabama; Julien R. Steelman, president, Koehring Co., Milwaukee; and Harmer E. Davis, director, Institute of Transportation and Traffic Engineering, University of California.

Mr. Steelman, who has been president of the Construction Industry Manufacturers Association, is succeeded in that post by Harald Reishus, vice-president and general manager, Industrial Power Division, International Harvester Co. CIMA held its annual business meeting in conjunction with the ARBA convention.

Prestressed-concrete pipe failure halts Canadian job

Discovery of corrosion failures in a five-mile section of prestressed-concrete pipe installed by Preload Corp. of Canada has stymied a 37-mi water-supply pipeline project at Regina, Sask.

Preload, which is manufacturing and installing pipe under a $2.5-million contract, had manufactured 72,000 ft of the 36-in. pressure pipe before it was discovered that the circumferential prestressing wire had been affected by corrosion. The company closed down its Regina plant, which was built especially to make pipe for this project.

In an interim report on tests conducted by the company, R. M. Doull, Preload president, informed the city that the trouble lies in the concrete mix specified to meet Regina district soil conditions.

The company has proposed a new mix, eliminating the admixture, used as an alkali-resistant, and calcium chloride, used to speed setting.

Also suggested was demineralization of water used in pipe manufacture and consideration of some covering for the pipe such as asphalt for protection against the soil. (Regina soil is an extremely heavy gumbo clay.)

On the basis of these findings, Preload suggested to the Regina city council that it reopen its plant and get on with the work. However, skeptical city officials prefer to await a report from their own engineering advisors before making a decision.

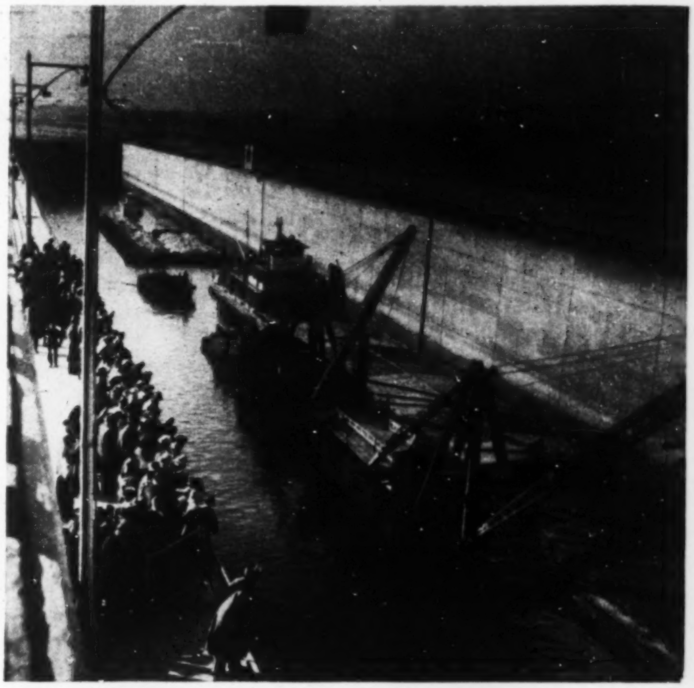
The project had already suffered one crisis when an abnormal proportion of pipe failed to pass plant tests—a matter remedied by tighter wiring. When this latest difficulty developed, the city began thinking again of turning to steel for its pipeline.

Allegheny sewer contracts now total $38.5 million

Contracts totaling $38.5 million, covering 42 mi of the proposed 60 mi Allegheny County intercepting sewer system project, now have been submitted for approval of Pennsylvania's State Sanitary Water Board.

Plans of the Allegheny County Sanitary Authority call for 31 mi of sewers in tunnels and the remaining 21 mi in open-cut construction. The authority's staff engineers are preparing plans for the main intercepting sewers to cost $40 million, and will finish their work by summer.

All or portions of 18 out of the expected 28 contracts for the project have been processed for state approval.



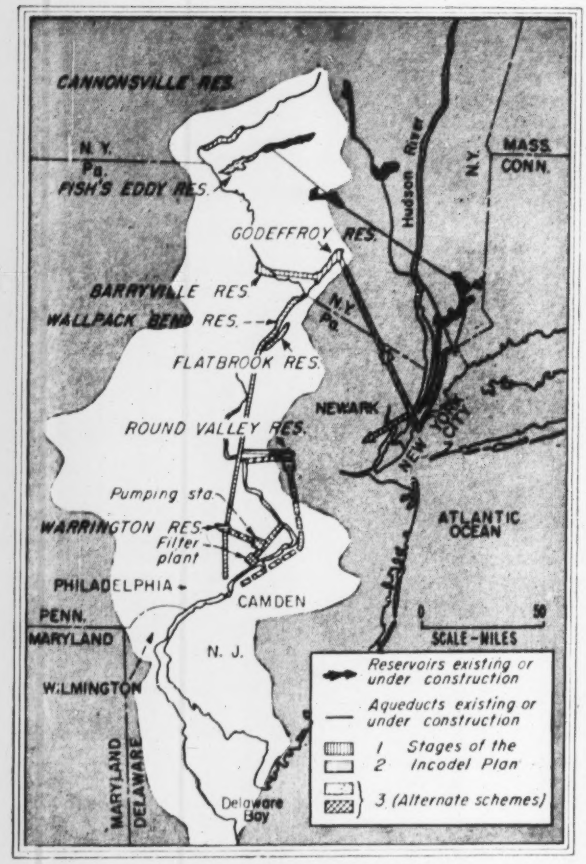
LONGEST LOCK in Western Hemisphere handles first traffic as . . .

ARMY ENGINEERS hail by-pass of Mississippi's last major navigational hazard.

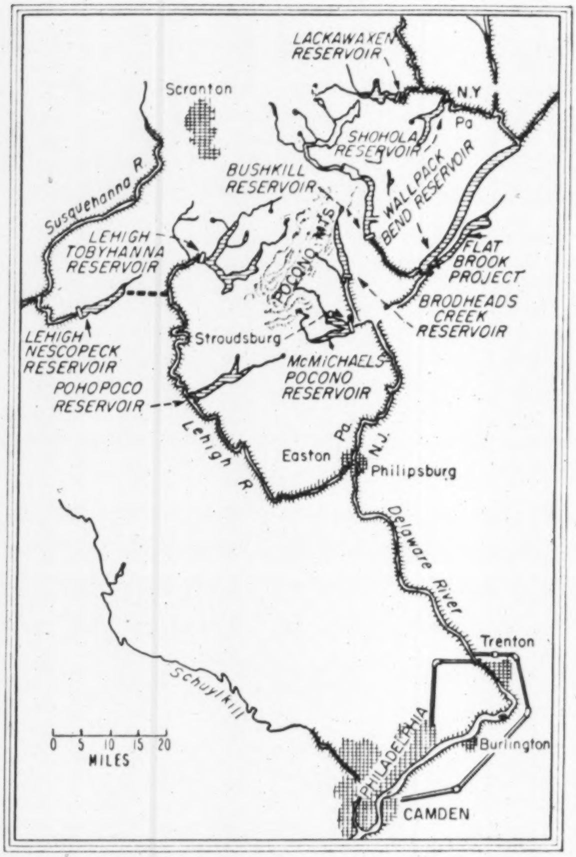
Chain of Rocks Canal opened

The $42-million canal by-passing the Chain of Rocks reach of the Mississippi River runs along northern boundary of St. Louis for eight miles. Main lock is 1,200 ft long and has walls 92 ft high. Upstream gates are double-leaf vertical-lift type weighing 450 tons and especially designed to facilitate passage of ice floes. Downstream gates are miter type. An auxiliary lock of half the size is not yet opened.

Lower photo shows district and division engineers and representatives of companies sending the first tows through the locks being interviewed by Frank Eschen of St. Louis station KSD-TV. From left to right are Yates Catlin of the American Waterways Association; William O'Donnelly of Massman Construction Co.; Joseph Vollmar, Jr. of Vollmar Bros. Construction Co.; Roy P. LeBoeuf of Commercial Petroleum and Transport Co.; Col. F. E. Ressegieu, district engineer; Mr. Eschen and Col. Delbert B. Freeman, Division Engineer, Upper Mississippi Valley Div.


CANNONSVILLE RES.
N.Y.
Pa.
FISH'S EDDY RES.
GODEFFROY RES.
BARRYVILLE RES.
WALLPACK BEND RES.
N.Y.
Pa.
FLATBROOK RES.
NEWARK
ROUND VALLEY RES.
Pumping sta.
WARRINGTON RES.
Filter plant
PHILADELPHIA
CAMDEN
PENN.
MARYLAND
WILMINGTON
N. J.
MARYLAND
DELAWARE
Delaware Bay
Hudson River
N.Y.
MASS.
CONN.
NEW YORK CITY
ATLANTIC OCEAN
0 50
SCALE-MILES
Reservoirs existing or under construction
Aqueducts existing or under construction
1 Stages of the
2 Incodel Plan
3 (Alternate schemes)

THIS IS THE INCODEL PLAN, evolved in 1950 by Malcolm Pirnie Engineers, of New York, and Albright & Friel, Philadelphia. They were engaged by the Interstate Commission on the Delaware River Basin to study full water-supply development of the basin. New Jersey, Delaware, and New York have legislated to form a compact to implement the plan. Pennsylvania has not.


LACKAWAXEN RESERVOIR
Scranton
N.Y.
Pa
SHOHOLA RESERVOIR
BUSHKILL RESERVOIR
WALLPACK BEND RESERVOIR
Susquehanna R.
LEHIGH-TOBYHANNA RESERVOIR
POCONO MTS
FLAT BROOK PROJECT
BRODHEADS CREEK RESERVOIR
LEHIGH NESCOPECK RESERVOIR
Stroudsburg
McMICHAELS POCONO RESERVOIR
POHOPOCO RESERVOIR
Lehigh R.
Easton
Pa.
N.J.
Philipsburg
Delaware River
Trenton
Schuylkill
0 5 10 15 20
MILES
PHILADELPHIA
Burlington
CAMDEN

THIS IS AN ALTERNATE SCHEME (intra-state, or interstate if New Jersey cares to go along) now proposed by consultants to a special water resources committee in Pennsylvania as better serving that state's needs. The consultants: Gannett Fleming Corddry & Carpenter, Harrisburg; Chester engineers, Pittsburgh; Greeley and Hansen, Chicago.

Incodel plan countered by consultants

Playing its role of Keystone State to the very hilt, Pennsylvania seemed likely last week to drop out and let the proposed Incodel plan fall with a shattering thud.

Engineers engaged to investigate Pennsylvania's interests in the scheme had turned thumbs down on it and offered as their alternative a new water-supply proposition to meet 900-mgd future needs of southeast Pennsylvania and southern New Jersey (see right-hand map).

As reported last week (p. 21), the Governor's Water Resources Committee for whom these engineering firms worked has made its report and chances are its early transmission to the legislature with Gov. Fine's approval will spell doom for the Incodel plan as originally conceived.

The Incodel plan (shown in left-hand map) calls for integrated, basin-wide utilization of waters for supplies, for low-flow increases and for a small amount of incidental hydro-power (ENR Feb 2, 1950, p. 25). It was proposed that the four basin states form a compact, get congressional approval, and set up an authority to finance (on future water revenues) the very extensive construction project. New Jersey, New York and Delaware are now left holding a bag full of legislation evidencing their good intentions to follow that plan.

• Pa. told to keep out—Governor Fine's committee has urged that the state keep clear of the compact, and establish a state authority to study independent action—plus the possibilities of an arrangement with New Jersey.

Here, in brief, was the reasoning of Pennsylvania's consultants:

- Under \$564-million Stage I of the Incodel plan, New York City and northern New Jersey would get 465 mgd of water; Pennsylvania would get only a boosted minimum flow in the Delaware—4,000 cfs at Trenton.
- For this, Pennsylvania would pay 35% of the total cost allocated to river regulation, or \$1.6 million per year.
- Improved sanitation from this river regulation could be better obtained from waste treatment.
- Later stages of the plan would boost the N. Y.-N. J. diversion to 930 mgd (in addition to the 440 mgd N. Y. now gets), and such diversions should not be countenanced.
- Later stages would develop the upper Delaware as a source for the Philadelphia area, but reservoirs wholly within the state could be constructed instead "at a cost probably no greater" than Pennsylvania's share of the cost of the Incodel project.
- Besides, the compact legislation as written would put Pennsylvania "at the mercy" of the other three states; leaving the whole matter of water diversions to the U. S. Supreme Court would be safer.

4319 Yards in 31 Hours!

WITH NEW 4-WHEEL DRIVE, 4-WHEEL STEER

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Right:
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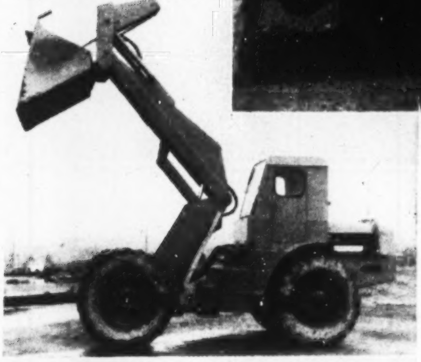
Scoopmobile
Model LD-10
loading sand



WITH ALL FOUR WHEELS supplying the driving power, this SCOOPMOBILE actually scooped, carried and loaded the amazing total of 4,319 yards of wet sand in 31 hours! Figure for yourself the advantage this performance will give you when submitting bids — how much more profitable your jobs will be.

Driving power is applied through 3-to-1 planetary gearing on all four wheels, providing added power and eliminating torque strain on axles and transmission. Center pin power steering makes maneuvering easy and quick.

The 4-wheel drive SCOOPMOBILE comes in two models: LD-10 with 1⅝ to 2 yards capacity (left, above), and LD-5 with capacity of ¾ to 1 yard (left, lower). Both are built to take the punishment of long, tough service, with weight built into the machine where strength is most important.

For further information on this new but thoroughly job tested 4-wheel drive SCOOPMOBILE, see your Mixermobile representative, or write us.

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Fabricators of Steel for Industry

78th ANNUAL REPORT

An Appraisal of Trends AND The Task Ahead

(CONTINUED FROM FRONT COVER)

IF, as all signs indicate, engineers, architects and construction contractors are to be key figures in a crusade to keep our economy expanding, they have many assets to draw upon. At no time in the nation's history has the economy been more fully or gainfully employed. Seldom has the pressure of increasing population been greater. Never have desires for an increasing standard of living been so demanding.

These are powerful forces. They lend hope, even assurance, that when that part of the economy's support now centering on defense is lessened, the ability to create national wealth will remain unimpaired. Used wisely and well, this ability will carry the nation far above its levels of the present when so much effort is going into the unproductive activities of defense.

There are other favorable factors for construction to draw on. Its costs are stable—and apt to remain so, or to rise in slow stages. Its supplies of materials and equipment are adequate for all needs. Its backlog of jobs, measured in projects actually proposed, is huge and continually growing. Its technical talents are being enlarged by aggressive research and new increments of experience.

Pulling against the prosperity that these forces favor are such things as a falling rate of household formation, a slight tendency to slow down on capital expenditures by industry and government, and a chance that whatever cost increases may occur will not be matched by comparable or better productivity.

But despite these unwelcome possibilities, the net balance is favorable. It is spelled out to the following conclusions in the pages that follow:

For 1953—The construction boom will continue, paced by highways, schools and commercial buildings. ....page 53

For the future—Defense spending will drop, but be offset by the need to service an expanding economy and an increasing population. ....page 65

For military construction—Airbase building will step up its dominance both at home and abroad. ....page 83

For techniques—Design and construction will be focused on better use of materials, more mechanization. ....page 87

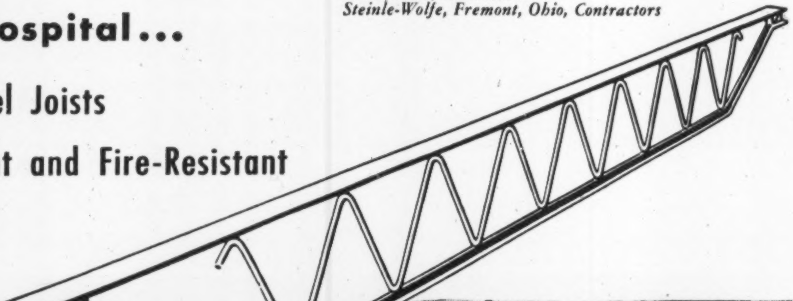
The task ahead is to convert these prophecies into such progress a stronger, more prosperous nation may indeed emerge—with renewed faith in its future, and increased confidence in the services of construction.

Wood County Hospital, Bowling Green, Ohio.
Strong, Strong & Strong,
Lima, Ohio, Architects.
Steinle-Wolfe, Fremont, Ohio, Contractors

Wood County Hospital...

where Truscon "O-T" Steel Joists

Make Floors Light and Fire-Resistant

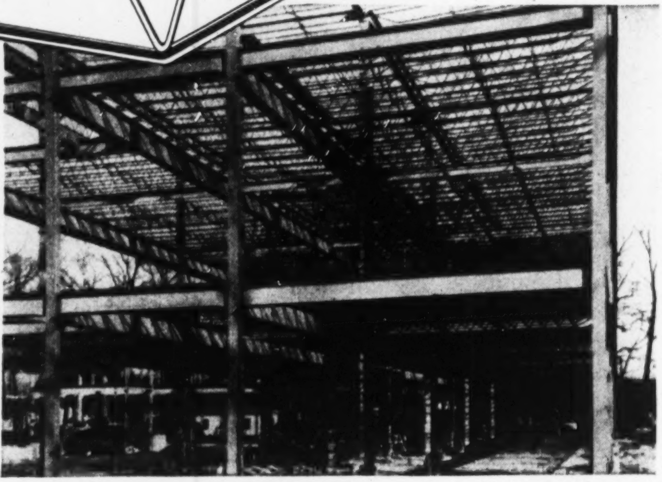


Light? Yes. The light weight of Truscon "O-T" Steel Joist construction lessens time and labor required for erection. It saves materials in supporting framework and foundations.

Strong, too. Wide, specially-formed top and bottom chord members impart stiffness, and keep joists true to line. Continuous steel web member is electrically welded to the chords.

Fire-resistant? Yes. Tests prove that ¾-inch of cement or gypsum ceiling plaster on metal lath protects Truscon "O-T" Open Truss Steel Joist construction against high temperatures. In fact, the majority of insurance rating bureaus recognize the merits of this construction and give it a first-class fireproof classification.

Investigate this lower-cost-per-square-foot construction that assures adequate strength and safety. See Sweet's for complete specifications on Truscon "O-T" Steel Joists. Write us for literature describing the complete line of Truscon Steel Building Products.



Truscon "O-T" Steel Joist construction for floors and roof. Underslung design of the bearing means maximum headroom under supporting girders. Open web allows passage of pipes and conduit in any direction.

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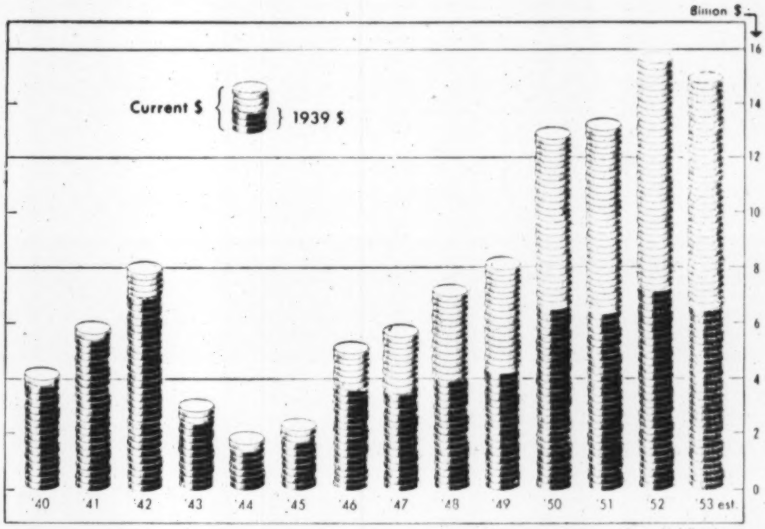


HEAVY CONSTRUCTION'S recorded contracts set records in 1952 both for dollars invested and physical volume of work started.

Stage set for another big year

Construction contracts will be close to record levels of last year, costs will rise only slightly and materials and equipment will be adequate.

Construction in 1953 is off to a booming, unprecedented start. In the first six weeks, contracts totaling $2.2 billion have been let to chalk up an increase of 59% over the beginning that 1952 made in the comparable period. And '52 went on to establish an all-time annual record for heavy construction of $15.7 billion.

Before jumping to unwarranted conclusions, however, it is well to recall that in 1952 the step-up in building new atomic energy plants accounted for 15%, or $2.3 billion of the total. Repeat business from this source and in this volume is not in the cards for '53.

To evaluate 1953 prospects, then, it is wise to consider them with and without AEC in the picture. With AEC included, it looks like a 4% drop in total volume of new contracts. Excluding AEC, all other contracts should turn in an increase of 7% over 1952. So 1953 will be a record year, too, even if it doesn't quite reach up to 1952 overall.

• **What happened in '52**—Although all forecasts, including our own, had envisioned drops of as much as 10% below 1951, the past year's heavy construction total was 15% above. Even eliminating atomic energy contracts, the 1952 total was down only 1%. The crystal gazers went wrong mainly on private housing and commercial building, which were far more unhampered by federal controls than had been expected.

Here is where 1952 accomplishments produced big changes from the 1951 construction pattern:

Private mass housing went up 48%, commercial building 41%. Industrial building turned in its second highest year, but was still off 34% from the 1951 peak.

And there was also a 21% decrease in unclassified private work. The net result was a 4% drop in private contracts for the year.

Public construction, on the other hand, was up 39% with AEC the big force behind it. Bridge contracts increased 30%, highways 20%. Waterworks awards were 11% higher, public buildings, excluding atomic energy plants, were up 1½%. AEC awards were nearly 18 times higher than in 1951.

Partly offsetting these increases, unclassified public work dropped 10%, sewerage awards went down 9%, public housing 6% and earthwork and waterways 2%.

Three states topped the $1-billion mark in 1952, Ohio with $1.892 billion, Texas with $1.587 billion and New York with $1.166 billion. California turned in a $982-million total, Tennessee $804 million, Kentucky $716 million, Pennsylvania $689 million, Illinois $633 million and Michigan $525 million.

As to the regions, Middle West turned in a 44% gain and South 35%, both courtesy of AEC. Middle Atlantic was up 3%, West of Mississippi 2%. New England broke even, and Far West dropped 3% below 1951. These compare with the national average gain of 15%.

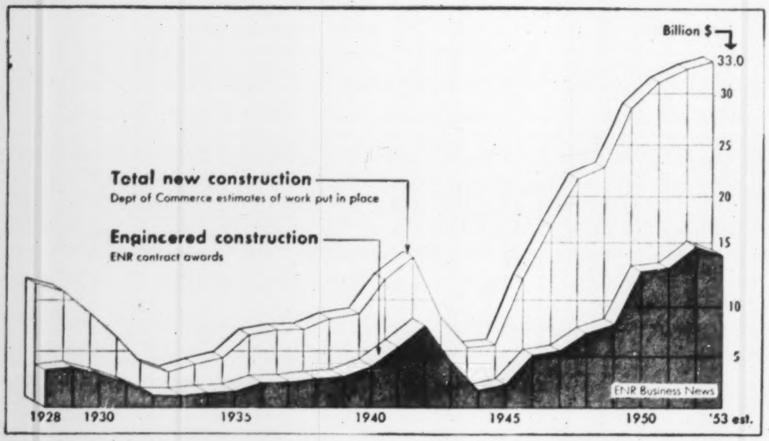
More contracts came out of the proposed construction backlog last year than ever before—half of the total when AEC awards are excluded. Proposed projects poured into the

ENGINEERING CONSTRUCTION OUTLOOK

(Contract awards as reported by Engineering News-Record and Construction Daily)

Millions of dollars

Type of construction	Actual 1952	Estimated 1953	% Chg 1952-53
All, incl AEC	$15,689	$15,010	− 4
excl AEC	13,362	14,260	+ 7
Public, incl AEC	8,577	7,530	−12
excl AEC	6,250	6,780	+ 8
Waterworks	231	230	0
Sewerage	304	350	+15
Streets, roads	1,397	1,750	+25
Bridges	395	500	+21
Earthwork, wtrwys	496	450	− 9
Building, excl AEC	1,966	2,100	+ 7
Atomic Energy Comm	2,327	750	−68
Housing	606	500	−17
Unclassified	855	900	+ 5
Private	7,113	7,480	+ 5
Housing, mass	3,002	3,000	0
Commercial bldg	844	1,100	+30
Industrial bldg	2,722	2,750	+ 1
Unclassified	545	630	+16



ESTIMATES of total construction put in place, also setting new record, little more than double recorded contracts.

backlog at the second highest rate on record. Total in during the year was $13.3 billion, total out $6.7 billion. The difference, $6.6 billion, pushed the standing backlog of identified proposed construction projects to $68.7 billion.

For a complete analysis of the backlog, showing how much of each type of construction it includes and how the backlog is growing in different sections of the nation, see page 71.

The stage setting for 1953 thus combines the highest rate on record of awarding contracts with the largest backlog of work proposed for future contracts.

• **What's ahead**—How the actors are most likely to perform is shown in an accompanying table. Public work, exclusive of atomic energy contracts, should be 8% more than in 1952. When atomic energy is included in the comparison, a 12%-drop is indicated. One reason for this is that the entire $1.2 billion Portsmouth, Ohio AEC contract was included in the 1952 statistics. Large chunks of this job will appear as sub-contracts in 1953 but will not, of course, be recorded in this year's statistics. The $750-million estimate for AEC in 1953 is a drop of 68% from 1952.

Lower rates of activity can also be expected in public housing (a drop of 17% in forecast) and in earthwork and waterways (9%).

Waterworks and private mass housing should break even with 1952.

Big gains should come in commercial building, which has been most bottled up by controls (a 30% rise is projected) and in unclassified (20%). Industrial building including power plants should run about 1% ahead of 1953. The over-all gain in private construction should average 5%.

For public work, the big business area will be in highways and bridges, with 25% and 21% rises in contracts expected. Toll roads will make or break this forecast. Forty-four state highway budgets indicate a 9% increase in combined highway and bridge contracts on the free system. But toll-highway budgets are up 360%.

On the long chance that all of these budgets should be translated into contracts, there could be a 44%-increase in the total of highways and bridges on the combined free and toll-road systems. But since city and county expenditures are not expected to rise, the total over-all highway and bridge increases are set at 25% and 21%, as noted above.

Sewerage is due for another big year, probably its biggest, and an increase of 15% over 1952 is expected. Public building, including schools, should go up 7%, unclassified public construction, including airports, 5%.

Relaxed controls and the improved outlook for materials supplies make this further speed-up for construction possible. The tightening money market, however, could apply a light brake. These influences will be discussed in more detail in other sections of this report.

• **All construction up, too**—The foregoing outlook for new contracts relates only to engineering construction. For construction of all classes and sizes (and measured by amount put in place rather than by new contracts), estimates by the Department of Commerce place the 1953 total at $33.5 billion, a rise of 3.7%. Private construction, the department says, should gain 2.4%, public construction, 6.2%. The big increases in private construction are expected in commercial, 27.2%, and recreation buildings, 20%, and the big drop is expected in industrial building, 27.9%. Private housing put in place should increase 3.8%, and public utility construction, sparked by electric and gas utilities expansion, should show an 11% gain over '53.

Public building should drop 10.6%, according to Commerce estimates.

The decline in public building is a result of a 22% drop forecast for hospital construction and an 11% dip in public housing put in place. On the other hand, school construction is expected to offset part of this decline

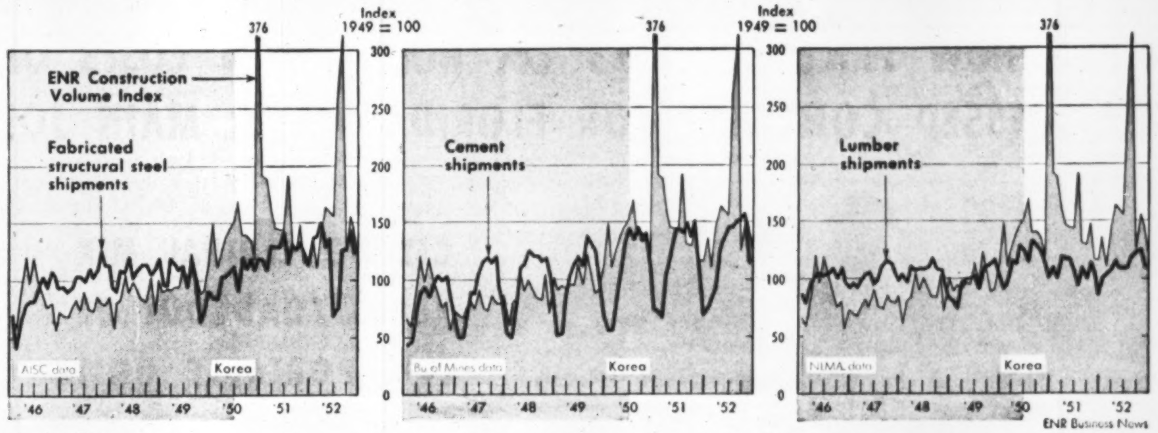
PLANT EXPANSION BY INDUSTRIES

	1950		1951		1952	
Industry	No.	Value	No.	Value	No.	Value
Transportation Service						
Railroad	56	$20,525,000	54	$21,515,000	48	$22,283,000
Automotive	274	45,231,000	211	43,227,000	173	34,798,000
Public Utilities	111	235,793,000	126	737,493,000	116	405,560,000
Process Industries[1]	541	507,765,000	651	1,450,297,000	574	1,271,693,000
Food Industries[2]	470	147,273,000	286	80,798,000	270	102,434,000
Metal Refining & Rolling	40	184,457,000	76	862,935,000	39	281,440,000
Metal Working Plants						
Auto Factories	23	130,545,000	24	74,645,000	28	55,674,000
Aircraft Factories	12	5,106,000	45	118,492,000	44	63,637,000
Foundries	22	18,017,000	28	5,396,000	12	2,733,000
Mach. & Mach. Parts	385	172,363,000	586	492,440,000	459	265,256,000
Radio & TV & Electronics	12	6,310,000	27	62,451,000	16	14,292,000
Textiles (excl. rayon)	88	38,134,000	79	28,873,000	78	20,730,000
Wood Industries	56	11,298,000	47	8,963,000	54	18,449,000
Miscellaneous						
General Factories	832	156,530,000	687	133,663,000	728	163,045,000
Refriger. & Cold Storage	12	3,475,000	10	2,338,000	3	345,000
Total, priv. financed	2,934	$1,682,822,000	2,937	$4,123,526,000	2,642	$2,722,369,000
Fed. Owned Indus. Plts.	...	$2,071,930,000	...	$581,741,000	...	$2,870,745,000

[1] Includes distilleries [2] included breweries, frozen food plants and lockers.

UNCLASSIFIED CONSTRUCTION—PRIVATE & PUBLIC

	1950	1951	1952
Private			
Transmission Lines	$107,552,000	$74,224,000	$85,428,000
Pipe Lines	601,155,000	365,226,000	185,565,000
Railroads	26,539,000	47,250,000	35,553,000
Telephone	6,315,000	16,618,000	41,686,000
Drive-In Theatres	19,196,000	3,262,000	6,807,000
Radio	3,603,000	5,244,000	5,154,000
Airports	3,614,000	11,939,000	20,870,000
Other	116,881,000	147,049,000	145,737,000
Total Private	884,855,000	670,812,000	526,800,000
Public Federal			
Airports, Airbases	7,149,000	234,103,000	96,673,000
Hangars, Buildings	28,172,000	183,024,000	242,457,000
Airport Housing	1,491,000	103,773,000	99,797,000
Airport Facil. & Util	7,302,000	106,683,000	128,724,000
Shipyards	1,730,000	12,601,000	33,707,000
Other	98,479,000	150,813,000	113,070,000
Total Federal	144,323,000	790,997,000	714,428,000
Public State & Municipal			
Airports	64,432,000	51,423,000	46,400,000
Subways, Tunnels	21,349,000	11,402,000	25,360,000
Other	140,860,000	92,314,000	68,510,000
Total State & Mun	226,641,000	155,139,000	140,270,000
Total Unclassified	$1,255,819,000	$1,616,948,000	$1,381,498,000



ENR Business News

SHIPMENTS of Big 3 construction materials have not kept pace with increased physical volume of heavy construction . . . shortages and slow deliveries show in the statistics, too.

with an increase of 10% in '53 while public industrial building should be up by 3%, due mainly to atomic energy work to be placed.

• The money for construction—Demand was high in '52 for money to finance new construction. Public works financing—federal, state, and municipal—had a big year. So did mortgage financing of homes and commercial construction. Corporate security sales, in contrast, declined.

State and municipal governments, with a total of $3.121 billion from bond sales, showed the biggest increase. This was 25% more than in '51 and was accomplished in the face of rising interest costs which saw municipal bond yields reach the highest rates since 1948.

The step-up in school and highway construction was largely responsible for the greater need for new funds. School bond sales brought in $1.088 billion, a 24% increase over '51. Highway financing at $844 million was 64% higher. Other financing—of new waterworks sewerage, and public buildings excluding housing—however, was lower than in '51.

Federal appropriations for fiscal '53 were 15% higher than for fiscal '52. They totaled $7.559 billion. Military construction, with $2.356 billion, and atomic energy construction with $3.328 billion accounted for 75% of this total. But much of this money will be spent in later fiscal years.

Big non-military items include $336 million for TVA expansion, 41% more than in fiscal '52. This is the direct result of expanding power needs of atomic energy plants in that area.

Civil functions received a 23% boost for flood control for which $237 million was appropriated. This was partially offset by a 16% drop for rivers and harbors to $325 million.

For private work, mortgage financing stepped up sharply in '52, reflecting the upturn in housing and commercial building. Recordings of mortgages of $20,000 or less established a new record in '52. Total dollar volume will add up to close to $18.0 billion in '52 compared with $16.4 billion in '51, the previous record year.

While insurance companies cut back, by 13%, their purchases of new mortgages of $20,000 or less in the first 10 months of '52, all other major types of mortgage lenders increased theirs substantially.

Savings and loans associations purchased 21% more of these mortgages in '52 than in '51. Commercial banks bought 6% more than in '51 and mutual savings banks, 11% more.

Business corporations financed less construction in '52 with outside cash.

Corporate securities for new construction money in '52 brought in $3,578 million, down 12% from the '51 total.

• Material supplies—The steel shortage was the 1952 villain in the construction act. The year started out hopeful that by the fourth quarter

CONSTRUCTION MATERIALS SHIPMENTS

	Units in Millions	1950	1951	1952*	% Chg
Cement, US Bu Mines.	bbl	227.788	241.184	251.136†	+ 4
Fabr struct steel, AISC.	tons	2.276	2.702	2.664†	− 1
Reinf steel, AISI.	tons	1.674	1.900	1.762	− 7
Brick, US Bu Census.		6,348	6,306	5,521	−12
Lumber, NLMA.	bf	39,680	37,655	35,205	− 5
Plywood, US Bu Census. . . .	sq. ft.	2,686	2,945	3,113	+ 6
Interior.	on 3/8"	2,120	2,167	2,221	+ 2
Exterior.	basis	566	778	892	+15

* ENR—estimates based on 11-mo figures.
† Final, 12-mo

STATE AND MUNICIPAL BOND SALES FOR NEW CONSTRUCTION

In millions of dollars

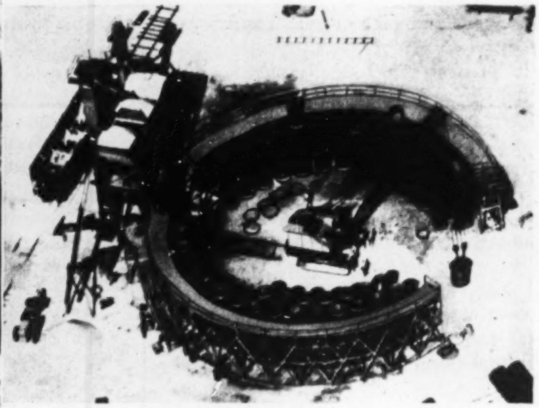
Type of construction	1952	1951	% Chg 1951-52
Waterworks.	$217	$261	−17
Sewerage.	228	260	−12
Highways.	844	515	+64
Bridges.	83	99	−16
Earthworks, waterways.	21	13	+60
Schools.	1,088	875	+24
Other bldg, excl housing.	188	216	−13
Unclassified.	451	254	+77
All types.	$3,121	$2,493	+25

HERE'S HOW PRICE BROTHERS CO. HOLD DOWN COSTS ON PRESTRESSED CONCRETE FOR FLORIDA WATER MAIN JOB

GETTING CENTRAL MIX PLANT LOAD OUT OF ERIE PORTABLE UNIT

Job calls for 8 1/2 Miles of Prestressed Concrete Pipe.

This is a GTES 100-yd. combination bin with EWEH 2-yd. AggreMeter, 75 TPH aggregate elevator, 50 TPH cement elevator with supplementary ground storage.



Upper photo shows the complete installation sold by Bode Finn of Dayton, Ohio

IT TAKES MORE THAN CAPACITY TO MAKE HIGH STRENGTH CONCRETE INTO 8½ MILES OF WATER LINE

It takes accurate batch control and fully portable equipment. Price Brothers Co. of Dayton, Ohio, are getting both in their Erie Portable unit on location near Miami, Florida.

Using a formula of Oolite rock, lake sand and liquid admixture, the plant you see in the photo turns out a batch of high strength concrete every 7 minutes.

Said Mr. Harry S. Price, Jr., Vice President, "We bought our first piece of Erie equipment back in 1925, and we're still using it. I am happy to say that our experience with Erie Portable on the Miami job is completely satisfactory."

Erie installations are engineered to do the tough jobs. That's why they work better . . . longer. When you consider batching and mixing equipment be sure to get the Erie story. You'll be glad that you did.

Cable Address: OPARD

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ERIE

STEEL CONSTRUCTION COMPANY

3811 GEIST ROAD • ERIE, PENNSYLVANIA

steel would be available for more jobs, but the strike blasted the hopes. The year ended with shipments of fabricated structural steel down 1% and reinforcing steel shipments down a total of 7%.

Structural steel shipments were almost 269,000 tons in March, 1952, but only 125,000 in June and 138,000 in July during the strike. Bookings for future shipments ran 14½% behind 1951 for the year.

Reinforcing steel shipments dropped off to 63,100 tons for the two months of the strike from a high of 193,000 in March. In October, they climbed back up to 197,000 tons.

Cement shipments broke all records by 4%, with 156 plants operating through all of 1952. Shipments topped 251 million barrels, and production topped 249 million, up only 1% from 1951. Shortages were felt in a number of sections, moderate shortages in nine states, a critical shortage in Ohio. Continuing shortages are expected in six states. Cement stocks in November were down to 8.8 million bbl, 11% below their low state in 1951.

Lumber shipments dropped off 5% during the year, but plywood increased 6%.

Interior plywood gained only 2%, so the big rise, 15%, was in exterior plywood used for concrete forms and increasingly used for roof panelling.

Brick shipments were down 12% for the year.

The over-all picture of building materials production has brightened considerably since the low point reached during the steel strike of June and July '52.

After it had tumbled between March and July '52 to the lowest point since early 1950, the Dept. of Commerce's index of production of selected building materials, unadjusted, climbed back sharply to reach 183 in October '52. This was the highest point reached by the index since October 1950 and it was 3% higher than in October '51.

Besides the recovery in steel, lumber, cement and brick, there were large gains in shipments of cast iron soil pipe, asphalt roofing, and gypsum lath. Shipments of gypsum board were back to the same level as in October of '51 and '50. Clay sewer pipe shipments, in October, hit their highest level in '52, although they were slightly under the level maintained in October '51 and '50.

• **Employment**—Contract construction employment in '52 remained close to the record level of '51, with the number of workers averaging 2.543 million during the year.

This was a reduction 1% from the '51 average. December '52 employment was 2.444, down 2% from the previous December.

The slight decline in '52 construction employment was due mainly to the smaller number of workers on building construction, which more than offset the increase in workers on non-building work. The step-up in highway construction was responsible for the higher non-building employment in '52.

Critical labor shortages are reported in 4 states, moderate shortages in 17. Shortages are expected to continue in 19 states.

Six states look forward to an improvement in the labor supply, and 18 states believe it will be adequate.

The shortage of engineers is reported critical by 23 state highway departments and moderate by 17. Thirty-seven states expect the shortage to continue, but three expect an improvement and four expect an adequate supply in 1953.

• **Equipment**—Construction machinery shipments broke all previous records for the first nine months, with a 14.5% increase over 1951. Wheel tractors continue to move fast, shipment-wise, with a 51% increase over the year before. They represent 21.5% of the total tractor bookings in '52, compared to only 10% in '50. Exports accounted for 29% of crawler tractor shipments which totaled $205 millions for the nine months, a new high. Exports took 27% of the wheel tractor $56-million total.

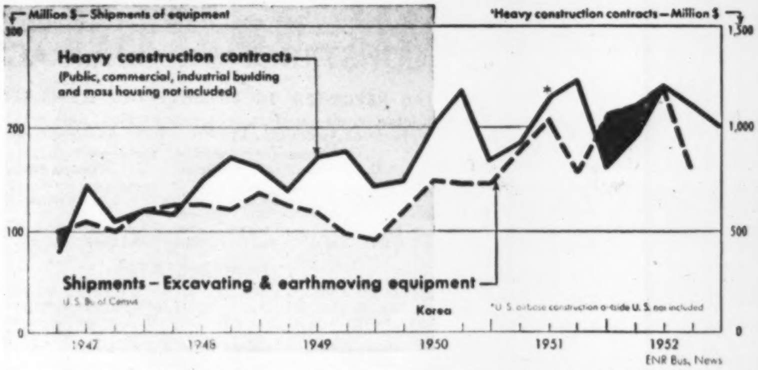
As to cost, construction machinery prices showed little change in 1952, with the exception of tractors and machinery for mounting on tractors.

The Bureau of Labor Statistics price index for December '52 pointed to a 4.2% increase in tractor prices since December '51 and a 6.7% increase in machinery for mounting on tractors.

Over the same period, however, scrapers and graders were up less than 1% and the price indexes for power cranes, trucks, portable air compressors and air tools remained about the same as in December '51. Prices of mixers and pavers, as measured by the BLS index, were a fraction of 1% under the December '51 level.

Construction machinery prices on the average have gone up 26% in the four and a half years since the Bureau of Labor Statistics pinned them together on the 1947-49 base. Prices of non-farm tractors and machinery for mounting on tractors are up 31%, paving mixers 18%, cranes and power shovels 24%, and scraper and grader prices almost 30%.

During that same period construction costs have also gone up 30%, although no conclusions should be



EQUIPMENT SHIPMENTS move with contract awards, even though the equipment curve shown here includes exports.

CONSTRUCTION MACHINERY SHIPMENTS

(Excavating and earth moving equipment, Bu of Census)
Millions of dollars

	Nine Months			%
	1950	1951	1952	Chg
Total, all types	$416.4	$549.0	$628.0	+14.5
Power cranes and shovels	76.8	130.7	149.4	+14
Road constr and maint machry	86.3	112.0	125.8	+12
Constr machry, mtd on tract	42.8	47.6	57.6	+21
Tracklaying tractors	172.1	188.7	205.3	+ 9
Wheel tractors	17.2	37.2	56.2	+51
Trucks, tr-tract, off-hwy trailers	17.5	24.9	26.1	+ 5
Portable well drills	2.7	4.1	4.8	+17
Other excav and ea-mov equip	1.1	4.7	2.8	−40

$15.7 BILLION IN CONSTRUCTION CONTRACTS AWARDED IN 1952

AS REPORTED TO ENGINEERING NEWS-RECORD

Covers construction projects of the following costs—waterworks, excavation and irrigation, $34,000; *other public works,* $60,000; *industrial buildings,* $82,000; *other buildings,* $300,000.

Thousands of dollars (000 omitted).

States	Public Works Contracts								Federal Government Work	Private Contracts			Construction		1952 Total 52 Weeks	1951 Total 52 Weeks	% Change '51-'52
	Waterworks	Sewerage	Bridges†	Earthwork Irr.-Drain.	Streets and Roads	Buildings		Unclassified†		Industrial Buildings	Commercial Buildings		Private	Public			
						Residential	Other				Residential	Other					
UNITED STATES																	
1952	231,058	304,372	413,200	495,908	1,396,532	606,272	4,292,575	1,381,498	4,501,049	2,722,369	3,001,941	843,519	7,112,618	8,576,626	15,689,244	....	+ 15
1951	208,813	335,089	315,945	504,517	1,166,988	644,222	2,057,276	1,616,948	2,245,805	4,123,526	2,032,180	599,859	7,438,167	6,167,196	....	13,605,363	......
% Change	+11	−9	+31	−2	+20	−6	+109	−15	+100	−34	+48	+41	−4	+39	+15	....	......
NEW ENGLAND																	
Me.	......	638	8,477	79	11,131	991	1,641	32,285	19,966	2,623	1,800	300	17,513	42,452	59,965	60,291	− 1
N. H.	236	267	139	30	6,977	789	1,420	6,860	7,096	282	550	660	1,492	16,718	18,210	8,251	+121
Vt.	366	69	1,327	13	2,695	517	4,250	671	642	860	550	....	1,510	10,869	12,379	5,915	+109
Mass.	4,260	14,699	19,303	3,839	43,925	28,153	65,220	18,225	31,761	53,380	60,213	26,977	140,895	196,238	337,133	357,698	− 6
R. I.	1,540	1,731	778	6	6,368	8,173	13,120	6,246	16,067	2,533	1,300	4,250	8,148	37,897	46,045	62,169	− 26
Conn.	262	5,321	2,426	135	6,084	27,436	21,536	13,215	2,435	22,601	40,178	10,651	83,530	66,315	149,845	129,611	+ 16
1952	6,664	22,725	32,450	4,102	77,180	66,059	107,187	77,502	77,967	82,279	104,591	42,838	253,088	370,489	623,577	....	0
1951	8,086	18,196	31,912	3,839	44,518	76,907	192,160	62,389	137,600	106,712	42,496	36,720	192,424	431,511	....	623,935	......
% Change	−18	+25	+2	+7	+73	−14	−44	+24	−43	−23	+146	+17	+32	−14	0	....	......
MIDDLE ATLANTIC																	
N. Y.	4,112	11,704	64,299	4,835	129,443	71,016	153,889	48,880	48,644	24,319	521,050	132,830	695,199	471,178	1,166,377	826,252	+ 41
N. J.	4,510	8,079	16,968	3,362	22,373	32,675	47,639	19,184	59,754	24,784	141,334	6,943	175,278	152,573	327,851	345,592	− 5
Pa.	3,869	15,294	17,534	2,123	76,627	31,781	76,008	14,345	37,337	145,186	213,142	93,482	456,723	232,668	689,391	1,028,976	− 33
Md.	8,492	7,595	7,016	1,620	27,706	7,517	68,745	13,511	57,277	46,946	81,340	12,650	140,996	142,142	283,138	257,144	+ 10
D. C.	840	2,468	2,472	......	2,699	4,738	15,410	2,361	11,691	320	25,928	25,840	53,788	29,288	83,076	33,439	+148
Del.	257	7,472	172	154	3,423	3,577	7,568	11,506	11,658	8,712	46,550	6,175	61,510	34,056	95,566	85,593	+ 12
1952	22,080	52,612	108,461	12,094	262,271	151,304	369,259	109,787	226,361	250,267	1,029,344	277,920	1,583,494	1,061,905	2,645,399	....	+ 3
1951	30,535	55,002	51,745	29,356	157,101	134,507	360,106	117,995	244,184	763,236	752,231	125,182	1,662,913	914,083	....	2,576,996	......
% Change	−3	−4	+110	−59	+67	+12	+3	−7	−7	−67	+37	+122	−5	+16	+3	....	......
SOUTH																	
Va.	4,432	3,611	2,316	4,610	22,093	23,846	49,921	54,678	77,738	60,188	139,640	7,755	212,902	160,188	373,090	213,335	+ 75
W. Va.	237	554	2,441	803	6,949	5,621	4,889	3,920	3,787	8,875	1,029	2,397	15,880	21,835	37,715	90,572	− 58
N. C.	5,490	3,758	5,995	3,172	37,787	11,026	29,070	57,855	43,560	21,847	54,985	17,079	126,198	121,866	248,064	193,650	+ 28
S. C.	2,132	2,083	4,779	1,609	16,049	7,771	19,927	27,523	20,409	16,739	76,050	6,038	107,259	73,441	180,700	148,144	+ 22
Ga.	6,208	3,415	20,166	2,925	30,212	19,425	57,321	40,847	75,676	63,160	68,480	7,736	149,527	170,368	319,895	282,212	+ 13
Fla.	3,461	6,618	4,142	21,226	30,696	9,129	29,476	75,963	97,120	50,382	133,819	20,189	207,328	177,873	385,201	317,586	+ 21
Ala.	2,443	2,376	5,976	236	18,157	16,436	62,103	10,313	59,210	21,661	29,791	8,351	62,374	115,469	177,843	212,021	− 16
Miss.	1,305	5,432	3,381	8,053	13,554	3,798	26,142	11,656	19,256	36,082	10,475	2,788	52,391	70,275	122,666	142,890	− 14
La.	11,925	3,668	14,043	17,093	24,478	11,684	35,614	36,793	37,112	146,779	34,727	18,850	223,142	132,512	355,654	394,419	− 10
Ky.	3,032	7,628	3,454	10,053	32,818	33,244	508,619	9,028	532,544	51,001	45,890	12,074	116,241	600,500	716,741	447,367	+ 60
Tenn.	2,919	4,521	3,810	21,869	27,913	23,637	577,992	30,252	584,881	46,378	55,580	9,231	127,530	676,572	804,102	318,233	+153
1952	43,584	43,664	70,503	91,649	260,706	165,617	1,401,074	358,828	1,551,293	523,092	650,466	112,488	1,400,772	2,320,899	3,721,671	....	+ 35
1951	41,991	55,863	81,482	58,320	252,114	245,132	487,724	356,561	595,141	794,219	276,351	110,672	1,313,182	1,447,247	....	2,760,429	......
% Change	+4	−22	−13	+57	+3	−32	+187	+1	+161	−34	+135	+2	+7	+60	+35	....	......
MIDDLE WEST																	
Ohio	12,493	10,531	17,242	3,214	37,354	1,470	1,280,976	53,226	1,259,829	214,385	144,802	116,089	502,183	1,389,599	1,891,782	502,167	+277
Ind.	3,289	7,745	8,034	1,101	20,338	13,061	55,447	4,108	39,787	34,991	61,370	11,260	111,581	109,163	220,744	343,836	− 36
Ill.	10,748	18,855	20,746	7,503	97,072	32,273	58,822	23,981	28,136	205,359	115,924	41,327	374,250	258,360	632,610	797,971	− 21
Wis.	1,386	9,764	9,534	197	46,878	3,896	32,591	2,454	20,626	42,507	6,701	12,072	61,635	106,345	167,980	130,400	+ 29
Mich.	12,780	13,095	11,930	584	52,910	9,924	82,995	13,530	14,793	115,302	161,150	50,310	331,182	193,328	524,510	607,214	− 14
1952	40,696	59,990	67,486	12,599	254,552	60,624	1,510,831	97,299	1,363,171	612,544	489,947	231,058	1,380,831	2,056,795	3,437,626	....	+ 44
1951	39,528	84,221	33,190	9,796	190,287	49,842	355,234	133,740	210,905	1,001,074	357,240	127,436	1,548,439	833,149	....	2,381,588	......
% Change	+3	−29	+103	+29	+34	+22	+325	−27	+546	−39	+37	+81	−11	+147	+44	....	......
WEST OF MISSISSIPPI																	
Minn.	1,201	3,390	5,322	2,523	39,140	172	28,146	6,920	11,808	12,772	5,796	15,048	33,958	86,472	120,430	254,326	− 53
Iowa	544	1,825	9,834	3,936	39,817	350	15,398	4,945	5,931	77,279	13,923	9,993	102,845	74,999	177,844	130,128	+ 37
Mo.	1,322	5,773	10,488	9,128	26,968	25,532	16,650	45,691	43,577	50,396	111,300	23,050	204,688	121,610	326,298	336,401	− 3
Ark.	2,374	1,555	62	14,674	18,212	2,371	24,622	9,672	37,830	98,010	10,800	1,775	118,194	65,933	184,127	154,872	+ 19
N. D.	947	691	2,710	20,153	11,667	461	1,994	2,989	25,820	1,282	....	1,278	3,791	40,381	44,172	58,102	− 24
S. D.	727	478	3,450	31,637	11,722	353	2,727	15,816	43,196	690	1,844	335	8,429	61,350	69,779	100,817	− 31
Neb.	371	2,749	1,159	5,563	13,496	......	41,411	21,148	35,289	27,165	5,850	2,418	41,923	79,407	121,330	78,487	+ 55
Kan.	576	4,276	6,208	13,010	25,507	311	36,325	52,625	64,906	49,767	30,962	4,985	104,342	120,210	224,552	191,056	+ 18
Okla.	3,965	4,654	11,768	3,192	40,080	6,358	30,820	47,366	52,936	42,735	20,227	7,035	98,844	119,356	218,200	127,961	+ 71
Tex.	59,802	44,738	20,147	20,397	94,588	49,415	126,031	257,229	161,384	557,927	313,665	43,203	1,073,418	513,724	1,587,142	1,575,695	+ 1
Mont.	780	519	965	14,497	10,772	863	3,871	10,331	21,547	47,686	....	800	52,429	38,655	91,084	43,300	+110
Wyo	50	......	588	1,967	9,191	167	3,264	23,330	4,773	100	1,800	1,568	24,760	17,265	42,025	31,713	+ 33
Colo.	3,812	3,090	1,051	5,794	14,899	8,654	24,195	11,445	31,539	32,419	1,846	18,775	55,206	70,774	125,980	188,221	− 33
N. M.	348	368	836	2,472	14,072	1,431	17,836	15,760	30,154	9,975	4,705	5,099	23,884	49,018	72,902	79,430	− 8
1952	76,819	74,106	74,588	148,943	370,131	96,438	373,290	525,267	570,690	1,008,203	522,718	135,362	1,946,711	1,459,154	3,405,865	....	+ 2
1951	59,535	74,498	67,737	162,683	367,270	92,539	333,894	581,490	493,694	1,086,648	396,795	131,420	1,970,529	1,379,980	....	3,350,509	......
% Change	+29	−1	+10	−8	+1	+4	+12	−10	+16	−7	+32	+3	−1	+6	+2	....	......
FAR WEST																	
Idaho	393	344	724	45,900	10,393	1,164	36,556	11,127	85,964	98	2,990	....	11,328	98,361	109,689	33,704	+225
Utah	450	697	741	2,692	10,788	......	16,941	10,377	13,686	11,505	3,884	4,618	30,023	32,670	62,693	72,683	− 14
Ariz.	1,592	......	900	5,410	10,884	......	3,268	9,010	15,044	18,638	28,123	....	47,727	30,098	77,825	65,660	+ 19
Nev.	224	780	117	273	8,227	197	5,892	7,273	14,643	....	4,250	....	4,250	22,983	27,233	69,415	− 61
Wash.	3,882	8,621	17,232	77,106	24,426	16,764	192,410	41,549	276,797	58,503	23,117	7,337	98,077	372,870	470,947	364,069	+ 29
Ore.	5,789	3,775	8,545	34,828	33,711	380	16,453	13,159	47,883	4,073	....	4,389	11,748	113,354	125,102	163,889	− 24
Calif.	28,885	37,058	31,453	60,312	73,263	47,725	259,414	120,320	257,550	153,167	142,511	27,509	344,569	637,048	981,617	1,142,486	− 14
1952	41,215	51,275	59,712	226,521	171,692	66,230	530,934	212,815	711,567	245,984	204,875	43,853	547,722	1,307,384	1,855,106	....	− 3
1951	29,138	47,309	49,879	240,523	155,698	45,295	328,158	364,773	564,281	375,637	207,067	68,429	750,680	1,161,226	....	1,911,906	......
% Change	+41	+8	+20	−6	+10	+46	+62	−42	+26	−35	−1	−36	−27	+13	−3	....	......
CANADA																	
1952	20,814	18,791	31,355	156,698	41,856	43,376	120,351	323,820	233,733	219,551	144,189	61,655	596,003	586,453	1,182,456	....	− 6
1951	25,873	14,190	17,283	92,304	53,952	80,669	218,274	160,648	274,423	439,561	67,602	50,521	597,444	663,193	....	1,260,637	......
% Change	−20	+32	+81	+70	−22	−46	−45	+102	−15	−50	+113	+22	0	−12	−6	....	......

† Incl. private $670,812 ('51)

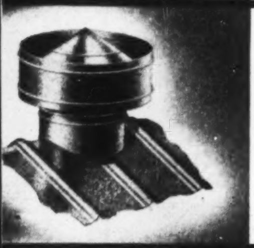
Bridges, public $395,211 ('52), $304,155 ('51), private $17,989 ('52), $11,790 ('51)

Unclassified, public $854,698 ('52), $946,136 ('51), private, $526,800 ('52)

Butler Built to Last Longer!

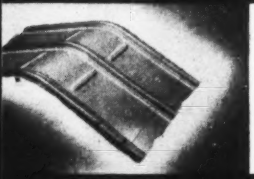
Rigid Frame Construction

No columns, pillars or other obstructions to waste floor space. Steel structurals, engineered for maximum strength per pound of steel, assure longer-life construction.



Ventilators

Stationary type. Completely weather-tight . . . full capacity opening. Made of heavy gage steel, sturdily braced.



Die-Formed Roof Ridge

One piece construction. Eliminates ridge roll. Quick, easy to erect. Weather-tight.

Bolted Construction

Galvanized bolts, inserted through precision-punched holes securely hold metal sheets to steel framework. Bolted sheet laps assure extra strength rigidity.

Mitering Under Eave

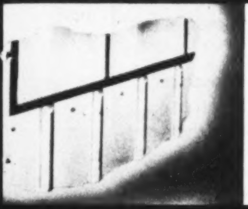
Sidewall sheets, miter-cut at top, form weather-tight fit with eave sheets . . . eliminate flashing.

Die-Formed, Curved Eave Sheets

Add trimness and finished appearance . . . easily bolt to other roof sheets for weather-tightness and lower erection costs.

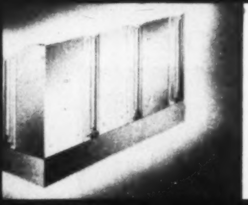
Butler Outside-Sliding Door

Rugged steel frame construction covered with Butler corrugated metal sheets. Firmly braced to reduce side rack. Doors slide on easy rolling trucks. The door track is securely fastened to the building.



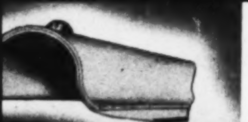
Weather-Sealed Windows

Corrugated sheets are tightly crimped at windows for snug fit and protection against snow, moisture, rodents.



Weather-Sealed Base

Corrugations in sheets are crimped at base to fit snugly against foundation. Sno-Titing guards against rodents, driving snow and rain.

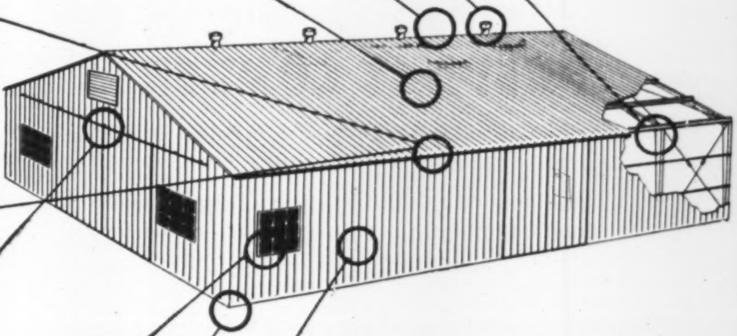


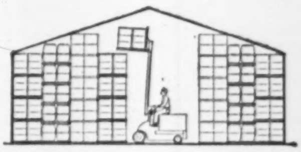
Butler Deep-Formed Corrugated Sheets

Formed on 12" centers. Three times as strong as ordinary corrugated sheets.

ROUNDUP OF BUTLER BUILDING FEATURES SHOWS WHY!

Here they are — *all* the major Butler Building construction features rounded-up together — so that you can easily see *why* Butler Buildings (galvanized or aluminum covered) are built better to last longer, pay off for you as a better long-term building investment!





Straight Sidewalls— Get All the Space You Pay For

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Birmingham, Ala. — Richmond, Calif.
Galesburg, Ill. — Minneapolis, Minn.

BUTLER STEEL PRODUCTS

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FARM EQUIPMENT — CLEANERS EQUIPMENT
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BUTLER MANUFACTURING COMPANY
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Dept. 18, Richmond, California

Send me complete information on Butler Buildings.

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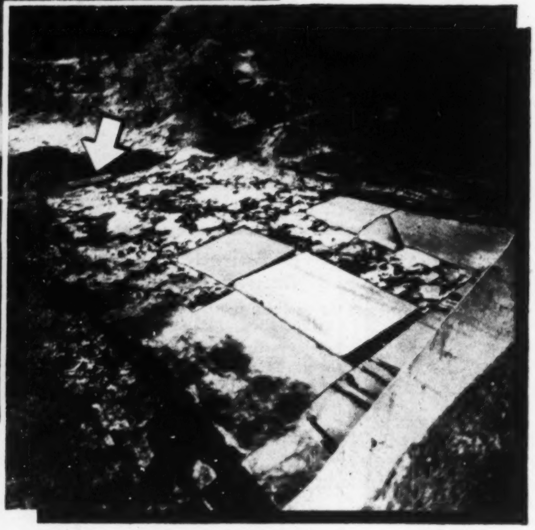
Firm______________________________

Address___________________________

City________________Zone____State__________



Consulting Engineers:
Commonwealth Associates, Inc.
Fargo Engineering Co.

Spillway apron at the Gorge Dam of the Ohio Edison Co. after repair operations by Prepakt. Photo (right) shows destructive effect of 1952 floods with slabs ripped loose and moved downstream.

PREPAKT CONVERTS FLOOD DAMAGE INTO MODERN SPILLWAY APRON

Last year, spring floods damaged the spillway apron at the Ohio Edison Company's Gorge Dam at Cuyahoga Falls, Ohio. Torrents of water undermined, dislodged and cracked the 75-ton concrete apron slabs.

The apron, located at the bottom of a gorge, was inaccessible by road. This posed some difficult restoration problems until Prepakt simplified the job.

Prepakt methods made use of existing slabs and consisted of (1) removing loose materials, (2) building required forms, (3) placing aggregate and (4) pumping Intrusion mortar. Aggregate was delivered by gravity chutes and mortar was pumped from the top of the gorge.

The improved apron as rebuilt by Prepakt incorporates permanent anchors in bedrock, baffles to absorb the destructive power of the water and a toe wall to prevent undercutting of the apron.

★ ★ ★

It has been proved that low-shrinkage Prepakt Concrete provides a high-strength permanent bond to existing concrete. Old concrete is fully incorporated into the complete monolithic structure, producing important savings in quantities of new concrete required.

Detailed information on this or any other Prepakt application may be had by writing or calling the Main Office, Cleveland, Ohio.

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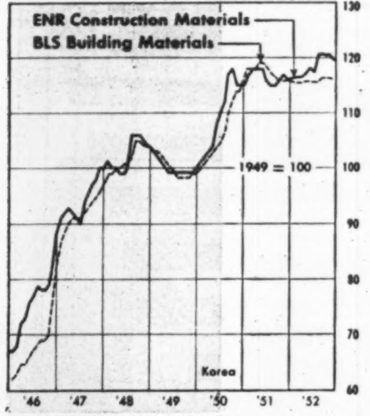
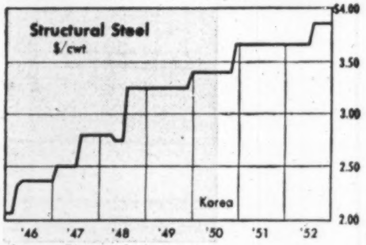
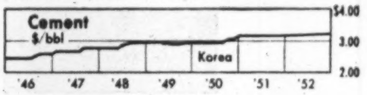
ENR construction materials price index hits new high in '52 . . .



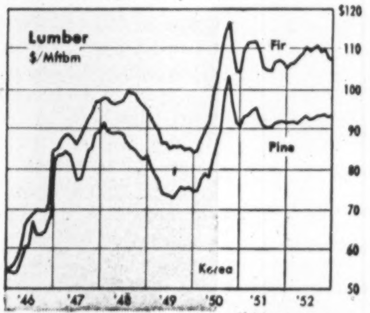
due to a 5.5% boost in structural steel price . . .



plus a small increase in cement price . . .



and small increases in lumber prices



ENR Business News

PRICES of the Big 3 materials should hold fairly stable, with cement and lumber easing up by 1-1.5%.

drawn from this close comparison. One has only to use another base, say 1939, to demonstrate that construction costs have gone up 149%, while equipment prices were rising only 93%.

• **Costs**—Construction costs have been leveling off since October. They peaked out at 588.6 in November for the ENR Construction Cost index and at 426.0 for the Building Cost index.

The February values are down to 587.2 and 425.2 respectively. (1913-100) Testing by the Petit method (ENR Sept. 4, 1952, p. 98) this looks like a pause only, and is not yet a confirmed new trend.

What 1953 will bring in costs depends largely on labor. With labor shortages in sight over wide areas, and a heavy construction volume expected, a rise of 5 to 6% in wages and fringe benefits could occur. With steel prices holding, and cement and lumber up 1.6 and 1%, the cost indexes should climb 2.5 to 4% by the end of the year.

The big three of construction materials prices—lumber, steel and cement in combination—hit a new high in '52. They increased 3.2%, as measured by the ENR index, compared with a rise of 1% in '51.

Steel was the principal factor, with a 5.5% boost in mill price, plus higher freight rates dating from May. Cement prices climbed 1.6% due mainly to the new freight rates. The same cause pushed lumber prices up 1.4%, but, in spite of that lumber prices closed the year 8½% below their 1950 pinnacle.

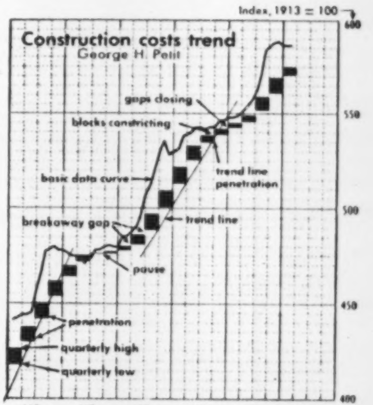
Among the materials not included in the index, a large increase, 3.5%, came in ready-mix concrete, while common brick and structural clay tile moved up by 1.6% and 1.2%, respectively. Even sand registered a small increase of 0.9%, but only 4 of the 20 cities continuously surveyed by ENR reported a price change in '52.

The BLS wholesale price index of building materials showed little change in December compared to a year ago. Finished steel, not as heavily weighted as in the ENR index, and building paper and paperboard were the only items showing a rise. Millwork and hardware showed no change from December-'51, while the indexes for lumber, heating equipment, and plumbing materials declined.

• **Wages**—Construction workers won their biggest wage increases in years in 1952. Common labor rates on building and heavy construction (ENR's 20-cities average) climbed 16.3 cents per hour in '52. This was a record, moneywise, for common labor wage hikes in any one year, and represented a 10.1% gain over the average rate for December '51.

The skilled wage average for bricklayers, carpenters and structural ironworkers rose by 17.7 cents per hour for the biggest gain since 1948. It was 6.6% over the December '51 average.

These increases include fringe benefits, which became an important item in construction wage demands in 1952. Bricklayers in 8 of the 20 cities now have one or more types of fringe benefits: pension, welfare, health insurance and vacation plans. Carpenters and structural ironworkers now have benefit plans in 5 of the 20 cities, and common labor unions have them in 4.

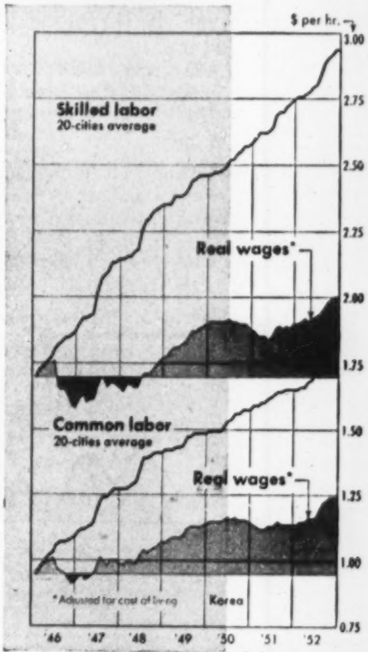


CONSTRUCTION COSTS, now pausing for a rest, are expected to begin another gentle 2-4% climb when the signing of new wage contracts starts.

There is plenty of momentum in adopting these benefits and '53 will see more unions fighting for similar or better plans.

Also important to the construction worker in '52, was the fact that his wage increases were not eaten away by higher living costs. Real wages for common labor increased by 8.8% from December '51 to December '52, and for skilled workers they increased 5.3%.

This was due to a combination of large wage gains and a relatively stable cost of living during the year. The Consumers Price Index finished out the year only 0.8% higher than in



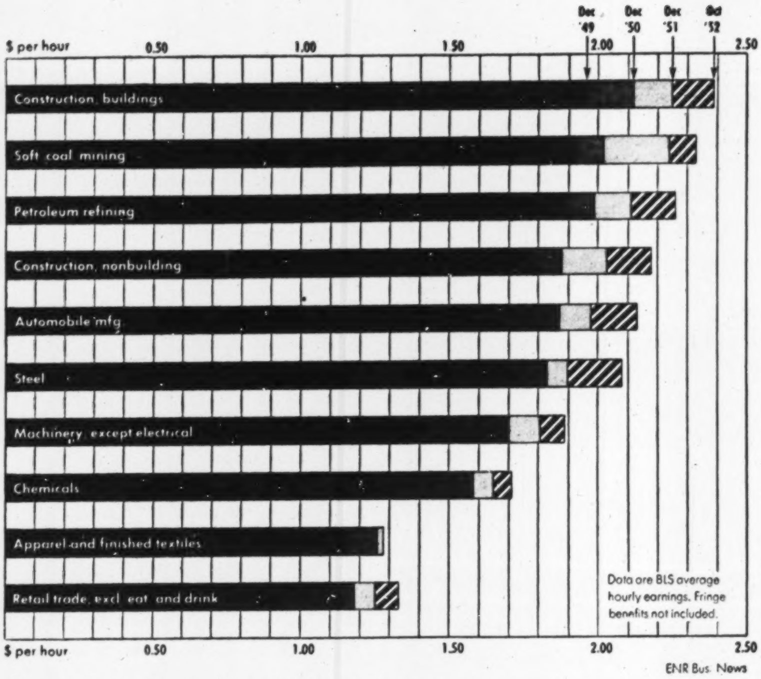
ENR Business News

CONSTRUCTION WAGES, with generous increases in '52 and real gains over the cost of living, should hold to increases within 5% in '53, mainly in fringe benefits.

December '51, compared to an increase of nearly 6% in 1951.

Construction workers held their own with workers in most other major industries. However, the 14-cents-per-hour earnings increase on building construction and the 15-cent increase on non-building construction (fringe benefits not included) didn't quite match the 18-cent gain made by the steel workers or the about-19-cent rise for the soft coal miners.

Earnings in the construction industry, nevertheless, increased almost twice as much in the first 10 months of '52 as earnings in machinery, excluding electrical, manufacturing and in retail trade. Construction workers' gains compared with no increase at all in the apparel and finished textile industry.



BUILDING CONSTRUCTION WORKERS still lead all U. S. labor in average hourly earnings, fringe benefits not included . . . non-building construction workers place fourth . . . soft coal miners' November increases pushed them ahead of building construction.

• Interest rates—Money costs continued up in '52, although the increase in interest rates was smaller than in '51, both for new high-grade bonds and for commercial bank loans.

The large volume of federal government debt financing in the fall of '52 led to an increase in yields on federal long term bonds. In December '52 the average yield was back up to 2.74% after declining from that same point in January to a 2.58% low in May. The last previous year the federal government paid that high a rate was in 1937, although in December '51 the yield reached 2.72%.

Municipal bonds suffered most from rising yields this year, hitting an average of 2.40% in December '52, the highest since 1948. In December '51 the average yield was 2.10%.

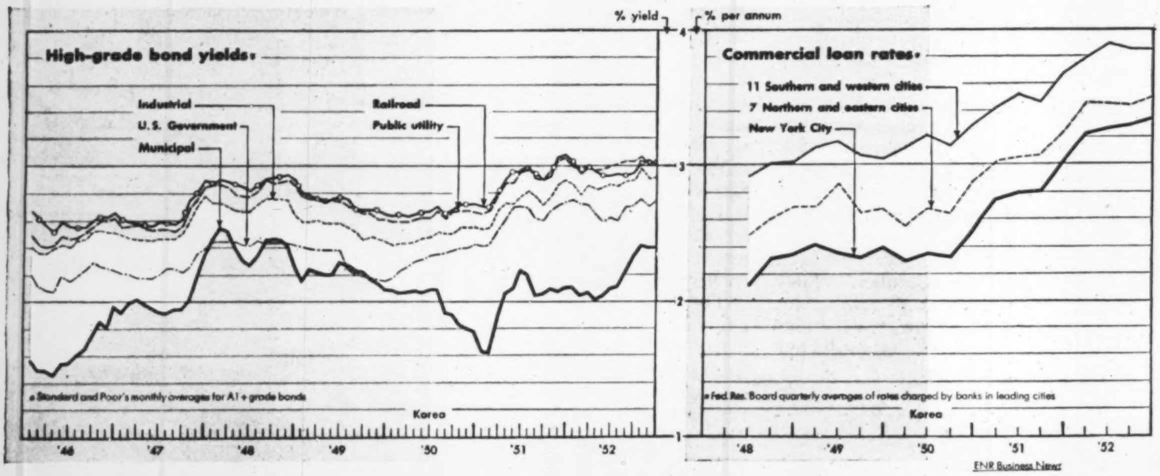
Industrial bond yields inched upward. In December '52 the average yield was 2.92% compared with 2.88% the year before.

Yields on public utility bonds seesawed back and forth in '52, and ended the year at 3.03%, down slightly from the 3.07% in December '51. But they were generally higher in '52 than in corresponding months of '51.

Railroad bond yields averaged lower in December '52, 3.00% compared with 3.09% the year before.

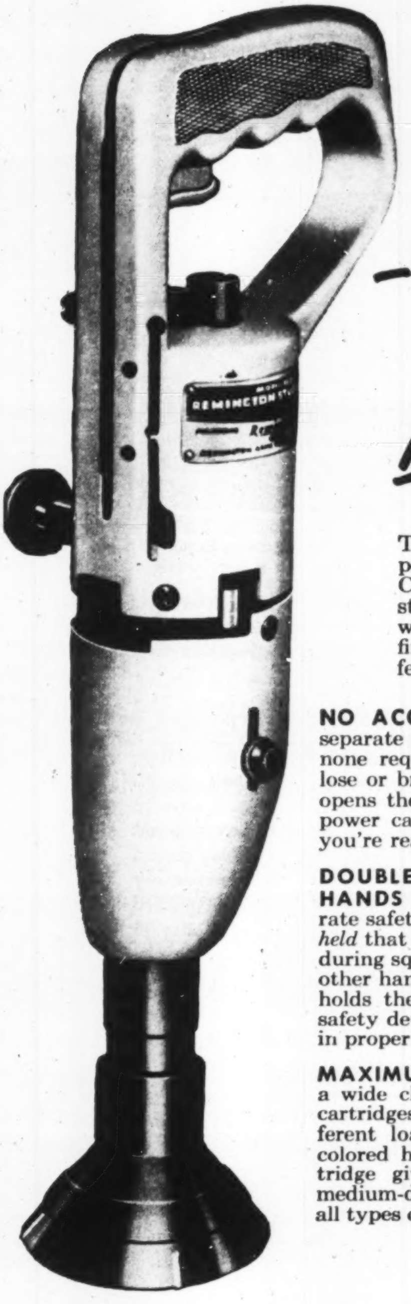
Some further rise in bond yields may come in '53. A substantial amount of federal debt funding later in the year would push up the yield on long term governments which in turn would lead to some yield increase on other types of bonds. The recent rise in the Federal Reserve rediscount rate may also be a factor.

Contractors faced higher interest rates on bank loans in '52. In New York City the average rate on commercial loans in December '52 was up to 3.33% from 3.01% in December '51. In seven other large cities in the North and East the rate rose from 3.23% in December '51 to 3.49% in December '52, and in eleven leading cities in the South and West the average rate increased from 3.67% in '51 to 3.84% in December '52.



CONSTRUCTION MONEY, too, is asking higher wages . . . the trend is up on bond yields for the long pull as well as on short term commercial loan rates.

MODEL 450 REMINGTON STUD DRIVER



—the *ONLY* powder-actuated fastening tool with *ALL* these advantages—

The Model 450 Remington Stud Driver sets up to 5 fastening studs per minute—a speed unmatched by other powder-actuated tools. Completely self-powered, this amazing tool fastens steel or wood structural pieces to concrete or steel surfaces in seconds. Its light weight—only 5½ pounds—makes it ideal for use overhead or in confined spaces. Check these other *exclusive* Remington Stud Driver features:

NO ACCESSORIES REQUIRED. No separate parts needed to control power, none required for loading—nothing to lose or break. Just a twist of the wrist opens the Model 450. Insert stud and power cartridge as a unit . . . close and you're ready! Whole job takes seconds.

DOUBLE-SAFE—REQUIRES *BOTH* HANDS FOR OPERATION. A separate safety lever must be depressed and *held* that way with one hand before and during squeezing of the trigger with the other hand. Safe, two-handed operation holds the tool steady. Two *additional* safety devices prevent operation except in proper fastening position.

MAXIMUM POWER RANGE. You get a wide choice of power in Remington cartridges. They're available in six different loads, each clearly marked by colored heel caps. The 32 caliber cartridge gives you extra power in this medium-duty tool . . . helps you speed all types of fastening jobs.

ARROW-STRAIGHT DRIVING—PERFECT GAS SEAL. Long heel cap on all Remington cartridges provides perfect gas seal . . . gives the Model 450 more power. Assures controlled, consistently straight driving.

FAST, POSITIVE EJECTION. Exclusive ejector snaps fired case out of tool instantly—no fumbling, no tools needed.

* * *

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The Surveyor's Notebook

Reporting on Unusual Surveying Problems and Their Solutions

Notekeeper: W. & L. E. Gurley, America's Oldest Engineering Instrument Maker

"...And Remember the Red River Valley"

"Reading in 'The Surveyor's Notebook' collection* about Arthur Kidder and Joe Thoma's cadastral surveys reminds me of the time I worked with them on the Oklahoma-Texas boundary dispute," says Wesson Cook, Planning Engineer, The Maryland-National Capital Park and Planning Commission.

"It was 1926. Under decree from the U. S. Supreme Court, our General Land Office party was assigned the job of re-establishing the boundary line at points where the Red River had changed its course—causing considerable dispute over locations of valuable oil lands.

"Along one 100-mile stretch, the old boundary was often submerged under shallow 'oxbow lakes' formed by the change in the Red River channel. It was impossible to mark the boundary or set up tripods.

"Here's how we got stations: We drove posts into the muck, then took the head off an old tripod and attached it to an iron bracket which slid down over the posts, and was fastened with clamp screws. With a triangular platform of heavy boards, we were able to walk around the stations without disturbing the transit.

1926 snapshot shows Cook leveling transit set up on boundary post in Red River.

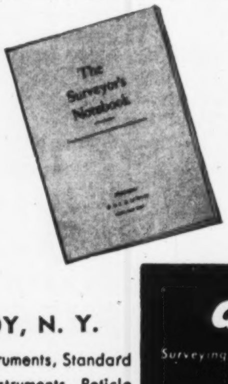
"One day, when we were working under considerable pressure, I lost the crosshairs of my transit. The work *had* to go on and I was afraid I was sunk. The only thing to do was to catch a spider and have it spin new crosshairs.

At Calvert Mansion, Riverdale, Md., HQ of Maryland-National Capital Park and Planning Commission, Wesson Cook sights through a new Gurley.

"We hunted for one; and, after finding a nice specimen, kept the little devil warm under glass until it had spun enough to help me. The biggest part of the job was getting the web in place. After spending the good part of an afternoon at the tedious job, I had crosshairs again. The work went on.

"This, of course, was before the days of glass reticles, and would never happen today with a Gurley Transit. I've used just about every make; and I'd say it's going to be pretty hard to beat a Gurley for accuracy and ease of adjustment."

***Kidder and Thoma's** account of cadastral surveying with a solar transit, Thoma's remedy for "frozen" tripods and all other stories and surveying tips from the first year's "*Surveyor's Notebook*" series have been gathered into permanent booklet form. Write for your free copy of "*The Surveyor's Notebook.*" You'll find it very helpful.



When writing for your bound copy of "The Surveyor's Notebook" stories, ask also for Bulletin 50. It gives full details on Gurley instruments.

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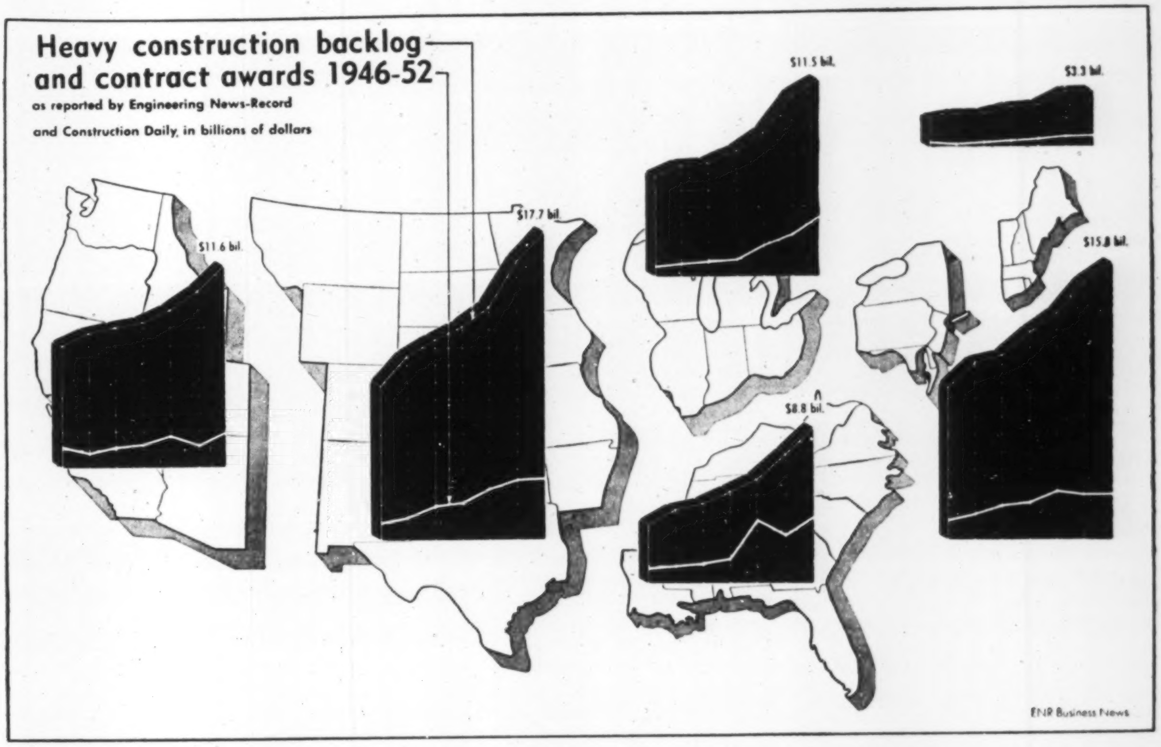


Heavy construction backlog and contract awards 1946-52
as reported by Engineering News-Record and Construction Daily, in billions of dollars

ENR Business News

Huge and growing backlog furnishes best answer to the burning problem of . . .

Construction after the defense boom

By all odds, 1953 should be the year that the construction industry has dreamed of for two decades. High activity, stable costs, adequate materials, full employment, a minimum of government controls—the list of good things in prospect is long and luscious. Yet its savoring to the full may not be manageable because of uneasy thoughts of the more distant future.

What happens to construction when defense spending slackens? This is the question that seems to arouse the queasy feeling, which is not abated by the fact that a goodly number of economists tend to approach its consideration with foreboding and its connotations with gloom. Still, however much defense spending may have provided the stimulus for certain categories of construction, it is far from being the only motive force that is operating. The others, fired by man's wants and needs—plus high incomes and record savings—are strong and growing stronger as the minimum levels of what is regarded as an acceptable standard of living continue to rise.

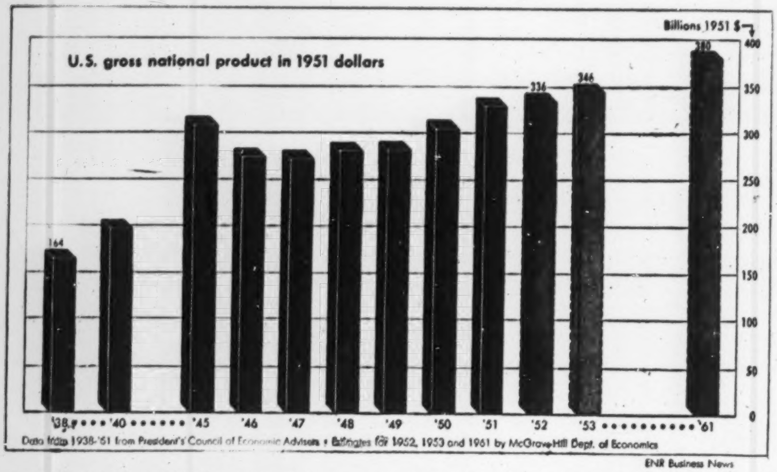
It is, therefore, worthwhile for everyone who makes his living or any part of it from construction to understand the industry and to appreciate the sources of its strengths and weaknesses. Otherwise it will be all the easier to think ourselves into a recession that may be wholly unnecessary or into one that is deeper than need be. It is the purpose of this article to examine some of these factors and to present some reminders of what is available to keep construction near a peak of performance in the years beyond the present one.

• A few pros and cons—It is a fact that the economy has reached a high point in the business cycle. Since the brief turndown in business activity in 1938, the gross national product (total prices of all goods and services) has increased four times. Public and private debt, together, have trebled. The general level of prices has doubled. Historically, such rapid expansion has raised the danger flag of a corrective recession.

As to construction, it, too, has experienced a steady rise—eight years of increasing activity placing it at the top of the longest and biggest boom in its history. So extensive has been the building of manufacturing plants, for example, that nearly half the country's industrial facilities are said to be less than six years old. And in the housing field a million units a year have been built for the last four years.

Since the most powerful motive force in the present phase of this expansion has been the defense spending of the federal government, it is natural to wonder what will happen when this spending is reduced a year or two hence. Industrial building and housing, for example, are powerful factors in the construction business and a drop-off in either would be felt very widely.

For those who will look deeper, however, a number of reassuring factors can be found. Not all industry, for instance, has participated equally in the boom—consumer goods manufacturers not having expanded as much as the durable goods segment, and chemical and machinery makers being barely able to keep up with the demand. Continued high activity in industrial building is, therefore, not an impossibility. As to commercial building, the last boom in this type of facility occurred in the 1920's, and in public buildings the deficiency in schools and hospitals is so widely acknowledged as to assure real efforts to reduce it.



Data from 1938-'51 from President's Council of Economic Advisers • Estimates for 1952, 1953 and 1961 by McGraw-Hill Dept. of Economics

ENR Business News

PREDICTED BUSINESS RISE in next decade is favorable to construction

New housing may be getting ahead of marriages, but there is still a huge volume of inadequate housing that must be replaced. The great military airbase program will be completed in a year or two, but in the meantime commercial airports are not being improved. The electric utilities and those purveying natural gas are still beset with shortages instead of excess capacity. Highways, of course, have enjoyed no boom at all, and water supply and sewerage are always growing in response to increasing population and higher living standards.

There are thus two sides to the question of whether construction activity is destined to slow down or maintain a high level somewhere near that of the recent past. Pitted against the signs that upward movement of the business cycle is nearing its peak are the unquestionable needs of a people wedded to the idea that their standard of living must always advance.

• **Who buys construction?**—To probe into the question of which set of forces is apt to prevail it may be well to review briefly how the construction industry operates—to understand the forces that guide and control its destiny.

Not an industry at all, as is auto manufacturing for example, construction is participated in by practically everyone, from the man who repairs his own woodshed to the engineers and builders of a great steel plant, an office building, a bridge or a dam, and to the suppliers of the tools and materials that the builders require. But if the term "industry" is to be applied to construction it must be classified as a service industry since it depends upon and services all other activities — such as manufacturing, transportation, commerce, agriculture and government.

Construction's buyers, first, then, are diverse in type. They are also, however, diverse in character. Some are just investors, others use the products of construction themselves. The buyers may be private individuals or corporations or they may be agencies of government—our own or foreign. To complicate the matter further, an individual may be buying construction in several of these categories at once.

• **What?**—Not only are the buyers diverse, their demands are extremely variable. Sometimes they want new structures, at other times alterations or repairs. At one time the private buyers may predominate, at another public demand may be on top. Or the peaks of both demands may coincide.

• **Where?**—There is also a geographical variation in demand. One city may have a housing boom while in another homebuilding is depressed. Dam building or bridge building may boom in one region and be non-existent in others. Commercial and institutional building varies in the same geographical way, while industrial construction responds more closely to the business needs of differing sectors of the economy—although its variation may also have a geographical aspect.

• **Why?**—Another distinguishing characteristic of construction—and the one that controls its destiny more than any other—is that it can produce only to order. Except for some forms of housing, construction has to have a specific buyer before its production process can begin. Thus, more than for any other product, construction depends upon the whims of the buyer—and more than in any other industry the buyers are unidentifiable until they voluntarily appear. It should also be noted that, except for the advertising done by the manufacturers of equipment and materials, a minimum of sales promotion is done by the construction industry to create buyers or to speed up their buying.

The buyer also exerts control of construction in another way, for it is generally he who provides the credit for the construction process. And since the buyer obtains his loan by using the structure to be built as security, the money lender enters the picture as a powerful factor influencing construction activity. He may determine the type of structure or whether any structure at all is to be built. And he may be a mortgage banker, a private individual or even the government.

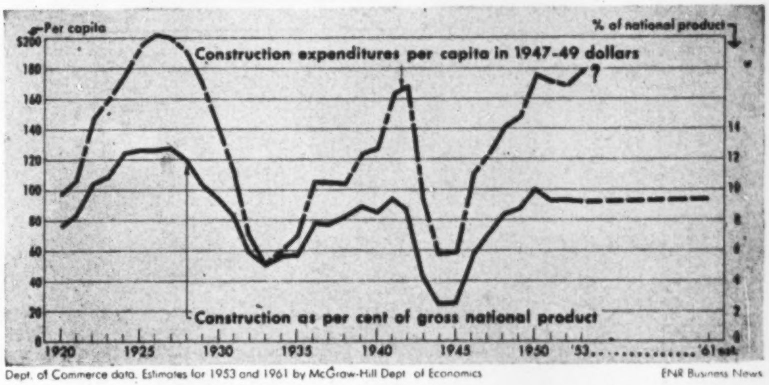
Nor is the government, in so far as construction is concerned, only a buyer. Government also sets many of the rules of doing business and thereby influences the amount and types of construction and, to a not inconsiderable extent, its cost.

Faced with diverse, unidentifiable buyers, unpredictable lenders and shifting governmental policies, construction can only be the creature of the general economic and social environment of the times. And whether this creature is healthy or ailing is the arithmetical sum of plus and minus factors occurring both in various segments of the economy and in various geographical regions.

• **Business is the key**—In brief, the health of construction depends upon the health of general business. In so far as this state of things largely precludes the industry from doing much business development for itself, it is a source of weakness. In a static economy this would be fatal, but in an expanding one the disadvantage is not controlling. Construction does well when business does well.

What happens to construction after the defense boom, or indeed, at any time, is therefore a result of a very complex set of buying influences inextricably tied to the state of general business. Now at the highest level in history, business has a momentum and a confidence that should carry it through 1953 on a high plateau of few indulations. The big question thus repeats itself—What happens them?

• **Effect of defense spending**—Since defense spending is such an important factor at present, its future prospects deserve first consideration. In 1953 this spending is destined to reach a peak level of about $55 billion, continue here for a year or more, and then begin to decline toward a $40-billion minimum, generally regarded as the



Dept. of Commerce data. Estimates for 1953 and 1961 by McGraw-Hill Dept of Economics

ENR Business News

CONSTRUCTION CAN MEET growing population needs when near 10% of GNP.

amount required to maintain and continue the defense establishment that we need.

That defense expenditures have been the largest single contributor to business expansion over the past few years is generally conceded. For example, business, as measured by gross national product, (GNP) chalked up a $345-billion total in 1952. For comparative purposes, this was $336 billion in terms of the dollars of 1951, a year when GNP was $329 billion. In the same dollars GNP was $303 billion in 1950 and $197 billion in 1940.

The big effect of the military spending program in increasing business is obvious. But, likewise, the small effect of a reduction from $55 billion to $40 billion of defense spending in the years ahead is equally obvious. There could be a recession from present high levels, but a serious depression cannot be a prospect.

• **Huge savings**–Another favorable business factor for the future is that consumers and business now hold the largest liquid assets on record. In 1952 alone consumers managed to put away $18.5 billion of savings, bringing the accumulated total above the $200-billion mark. On its part, business listed $17 billions of earnings after taxes and retained nearly half of this for use after paying out a record amount of dividends. Tax reductions, possible and promised, because of decreased military expenditures, can increase the chance of an even better showing in the years ahead.

• **Inflation brakes**–Business prospects over the long pull are also aided by the checks to inflation that are beginning to appear. One of these is increased production from the new facilities built over the last two years. Another is the drop in commodity prices almost to a pre-Korean level. A third is an increase in interest rates, dampening the ardor for speculation and over-extended credit buying. The latest development in this pattern was the raising of the Federal Reserve discount rate to 2%, the first time in 20 years the leading policies of the commercial banks have been circumscribed in this way.

• **Capital improvements**–Business is also greatly influenced by expenditures for private capital improvements. These have been projected into 1954 and 1955 by a number of authorities who see a minimum of about 80% of the $26-billion level of the first three years of the 1950's when defense industries were enjoying record expansion. Here perhaps is a deterrent to business growth, although a decline of this magnitude could be offset by public improvement expenditures, as for highways and sanitary facilities, schools and hospitals.

Moreover, in non-durable and consumer durable goods, such as refrigerators, automobiles and the like, the spur to buy will be as great as ever. These are the products that epitomize a higher standard of living and thus have a sustained appeal to the man in the street. His purchases of them, in turn, increase the pressure to enlarge or improve their production, thus stimulating capital improvement.

Were this chain of events to occur and industries other than those tied directly to defense to continue to expand, private capital expenditures may not go down at all.

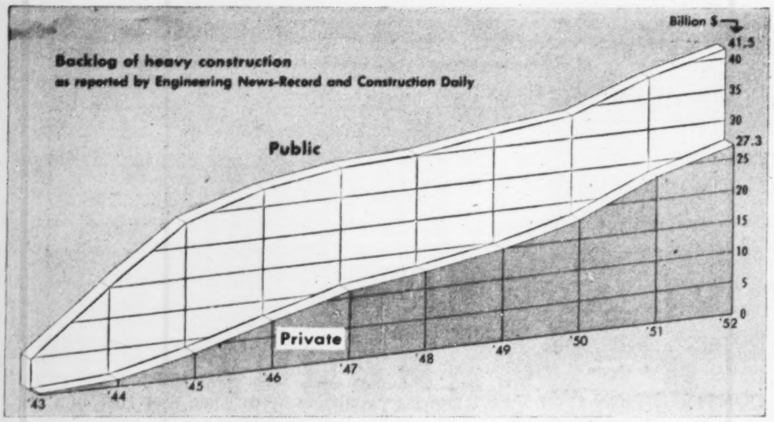
Business then is in a good condition to continue at high levels even though some of the stimulus lately provided by defense expenditures is scheduled to lessen. This does not mean that we have entered a new era where the business cycle is outmoded and recessions cannot occur. It does mean that there are enough sound factors foreseeable in the business picture to assure against deep dips, and to support a sizable volume of construction.

• **Governmental props**–There are also factors in the realm of government–and laws–that should not be overlooked in appraising business and construction prospects. For the years immediately ahead–at least for the four so far allowed the new administration–the political climate for business is generally conceded to be good. This means all government aid within reason–tax cuts when possible, fair and equal treatments of management and labor, a more stable dollar and a minimum of economic controls. These have been announced objectives, and there is also held out the hope for more efficient and less costly government machinery.

• **Purchasing power aids**–There are also legacies from the last 20 years or so that are assets to growth or hedges against recession. Some of them have increased the cost of doing business, to be sure, but they have also increased purchasing power and released some fears against using it. Among them may be mentioned governmental support of farm prices, unemployment compensation and social security in the form of old age pensions. The establishment of collective bargaining on wages and working conditions must also be regarded as an asset because it has not only increased the purchasing power of great masses of people, but has placed a floor under wages as an additional safeguard.

Looking further at these legacies from the past there is the Reconstruction Finance Corporation, which introduced the principle of government aid to business through specially set up government agencies. Following this principle, there emerged the Home Owners Loan Corp., set up to avoid mortgage foreclosures, and the establishment of the Federal Housing Administration to aid financial institutions by insuring mortgages. The important thing is that these institutions, or the philosophy that brought them into being, is still with us as a brake on any such downslide as occurred in the '30's.

• **Cushions against depression**–Other governmental legacies from the past that will be operative in the future to counter or soften the effects of depression or unemployment are the spreading of work by the shortened work week (the 30-hr model having been introduced by the Emergency Relief and Construction Act of 1932); the idea of federal aid for housing up even to the point of direct ownership (established by the Wagner Public Housing Act of 1936); and the principles of government building of special defense plants that emerged from World War II and of govern-



BACKLOGS of both private and public construction continue to grow.

ment aid through fast tax amortization that was introduced by the Korean war.

It may also be noted that in this past period we witnessed the initiation of joint venture contracts (on Hoover Dam); of the federal loan and grant system (in the PWA days); of the federal regulation of trucks and buses (from the Motor Carrier Act of 1935); of river system planning (first by the National Resources Board of PWA and then by the act that set up the Tennessee Valley Authority); of the placing of flood control responsibility and costs (exclusive of land and damages) on the federal government; and of legal permission to set up interstate compacts for pollution control in streams (by the Citron Act of 1936).

All these things—and there are numerous others—create an atmosphere for business and construction to operate in that is quite different from that of the last great boom in the '20's. Most of those cited are favorable to business and construction activity.

• Population pressure—There is another factor—increasing population—favorable to business and construction. In an economic sense, the United States, in contrast with some other countries, has always regarded babies as a boon rather than a burden. For, as potential consumers of goods and services, they are a vital ingredient in an expanding economy.

The present great need for new elementary schools stems directly from the high birth rate of the war years, and ten years hence these same young people will be forming families and building homes. The communities where they live will have to provide them with water, sanitary facilities and transportation. Factories will have to be built to provide them with goods and gadgets. Population pressure is one of the most important factors in assuring construction growth.

What then are the population prospects as bearing on the state of construction after the defense boom? Looking at the past, by decades since 1900, population has increased as follows (in millions): 16, 14, 17, 9, and 19. The smallest increase was in the depression decade, 1930-1940, the largest in the 1940-1950 war decade. Since, however, the peacetime-boom decade of 1920-1930 produced nearly as large an increase as the war decade—and a greater increase percentagewise—it may be concluded that prosperity rather than war is most conducive to population growth in America.

Actually the percentage increases are the most significant because they mirror more correctly how much the existing economic system must grow to service the increased population. With both war and prosperity operating in the past decade, population increased 14.5% to a total of 150,697,361 in 1950, according to Census Bureau figures. In the 1920-1930 boom decade the increase was 16%.

If then a 15%-increase can be assumed for this next decade, we can look forward to an addition of 22,500,000 people, bringing 1960 population to 173,000,000. Even a 10% increase, reflecting rather extreme depressed conditions, would add 15 million to the population—a not inconsiderable pressure in the market for goods and services and for construction. Actually, in the two years since 1950, it is estimated that an increase of nearly 8 million in population has already occurred.

• The next decade—About a year ago, the McGraw-Hill economics staff took a look ahead at the country's growth potentials until 1961, and assumed a population increase to 175,000,000. It placed the growth of the gross national product at 16% and construction's growth at 20%. All of these are conservative increases, below the comparable ones in the past ten years. The construction estimate, as a matter of fact, is far below that recently made by federal government economists who see construction rising 30% by 1960.

The basic considerations in the McGraw-Hill analysis were the population increase and an assumed improvement in productivity of 2% a year. The latter is the average increase over the last 20 years when both extreme depression and high boom were experienced. The survey recognized that optimum teamwork between management and labor, rather than just average, could jump productivity as much as 4% a year, but used the lower figure in the interest of realism.

On the basis of the 2% increase, gross national product in 1960 was estimated at $380 billion. Historically construction has accounted for 8 to 10% of gross national product; in 1949 it was 10.5%, in 1952, 9.5%. On the assumption of a 10%-contributing construction in 1960 would therefore total $38 billion (in 1951 dollars). The government economists go as high as $41 billion.

Between the attainment of these figures and last year's $32-billion total, there can be both ups and downs, but no large swings downward can occur if the final conservative total is to be reached. Construction, therefore, on both the basis of population and business growth has little reason to regard the period after the defense boom ends with trepidation or doubt.

• Buyers already at the door — But there is an even more potent reason—and one closer to home—why construction prospects after the defense boom can be viewed optimistically. This is the huge accumulated backlog of specific construction projects that have been announced for the future.

Inventoried by Engineering News-Record over the last 10 years—and continuously adjusted upward as new projects are announced and downward as projects on the list become actual contracts—this backlog has now reached the impressive total of $69 billion. Moreover the projects in the backlog are limited entirely to those of the engineering-construction type and to those mass housing jobs in the $300,000-or-over class; none of the other housing or of the small construction jobs is included, although these annually account for two-fifths to a half of total construction volume.

(Continued on page 71)

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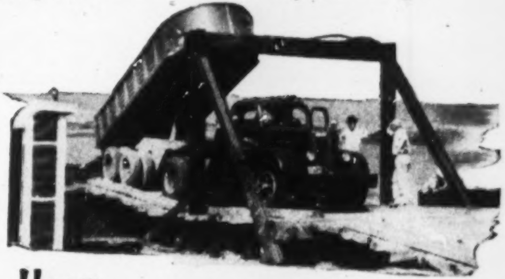
Whites are hauling bigger loads ... cutting schedule time ... making the grades without lugging ... because they are engineered to the work they are doing.

Here – One of the Whites starts its climb up the sand dune over a newly laid road of loose slag. Hauling 30,000 pounds of slag. Much of grade 30° and more.

Here – Expert touch needed here, lining up vehicle for run down ramp with full load. Uncertain footing and lots of strain but White handles well ... keeps coming back for more.



Here – Now the climb off the uneven ramp, on to loose shale. Really rough here. Some trucks started sliding and ended in canal. Others couldn't make steep grade. "Whites ideal for this operation," reports Charles Peters, president of Aalco. Performance proves it.

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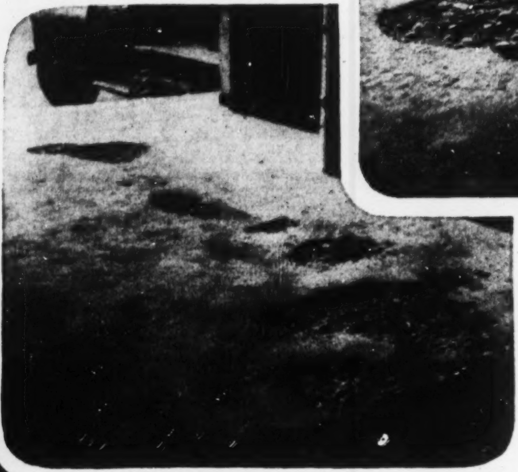
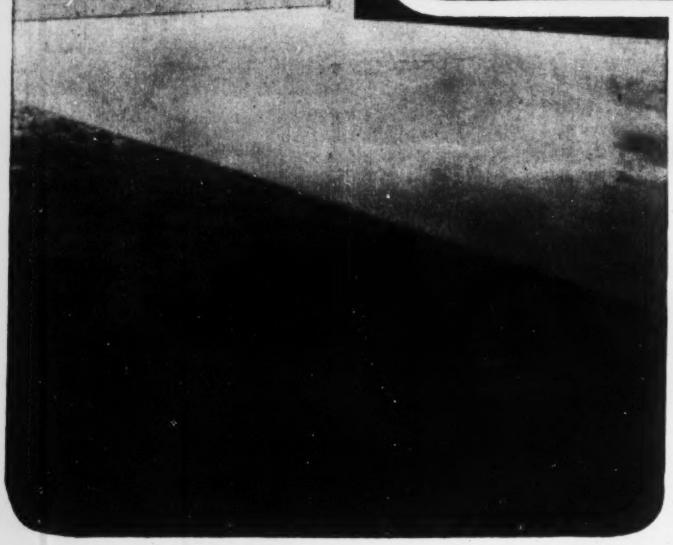


Smaller areas, around large one, is in complete state of disintegration.

BEFORE

Largest area is 2′ long and 18″ wide, 1½″ deep.



AFTER

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Floor area was back in use, for heavy warehouse trucks, 30 minutes after beginning work.

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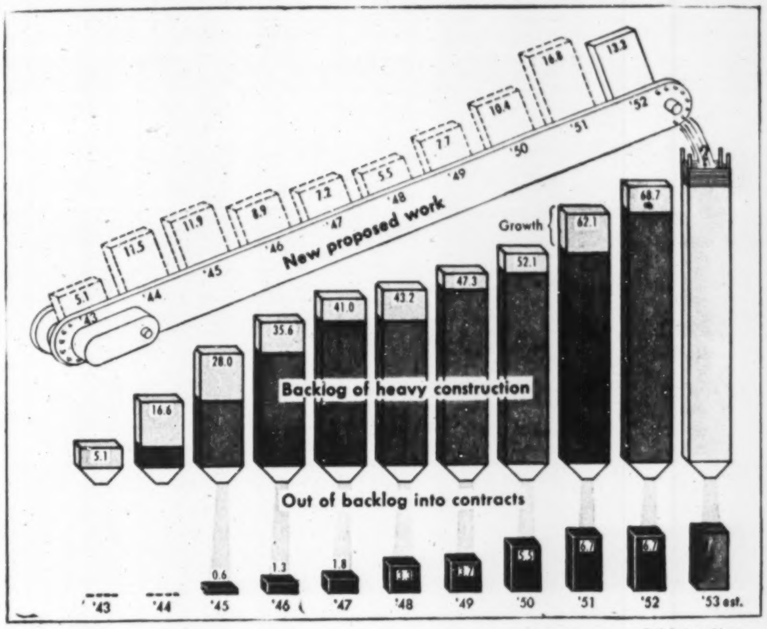
So, measured against the annual volume of the kind of construction included, the backlog is the equivalent of five years of work at the 1952 level.

• Who they are—The buyers of construction after the defense boom are thus already at the door. They are federal departments and agencies, which have announced projects estimated to cost $13.1 billions; states and cities, which list jobs totaling $28.4 billions; and private investors whose plans include projects adding up to $27.2 billions.

When will these jobs be ready for contracts? A look at what has happened during the past 10 years that the ENR backlog figures have been compiled offers a partial answer. This reveals that the backlog supplies each year something less than half of the total engineering-construction volume. Since 1946, when the backlog had grown to respectable size, this percentage has grown from about 25 to nearly 50. Using 40% and assuming a $14 billion engineering-construction volume this year, some $5.6 billion of work represented in the backlog would be contracted for during the next 12 months.



ENR Business News

BACKLOG HOPPERS growing bigger each year show pressure for new construction.

• Planning takes time—It may be asked why, if only $5 billion to $6 billion of jobs moves out of the backlog each year, its total can be at such a high figure as $69 billion. Are there a lot of "dream" projects destined never to be built? Are projects once admitted to the backlog never removed unless they enter the construction stage? The answer is "No" to both questions. There is constant combing of the backlog to keep it realistic.

The principal reason why some projects remain in the proposed stage for a period of years lies is the long "lead-time" required for construction jobs of the type represented. From definite proposal and preliminary planning to actual contract may be as long as 5 to 7 years, and is frequently as much as 3 years. Public work usually remains in the proposed stage longer than private work, which partly accounts for its predominance in the backlog figures. Another reason for this predominance is that smaller percentage of private jobs than of public is announced in advance.

It might be expected that the time would come when the backlog—still a relatively new device—would contain enough projects whose "lead-time" had expired that the outflow would be as great or greater than the inflow of newly proposed projects. This situation may indeed come about, although its chances are not good since in construction, as in all things, hopes always exceed performance.

• Why backlog grows—Actually, the fact that the backlog of proposed construction admits more projects annually than it discharges is not only a normal phenomenon, but a sign of strength. It reflects a confidence in the future that measures the pressure to get things done. Year after year this pressure has increased. As shown in the chart above the result has been a total "flow-in" over the past decade of $99 billions of projects, while the parallel "flow-out" has been $30 billion. The difference is the $69 billion size of the present backlog.

In so far as the individual engineer, contractor or manufacturer of materials and equipment is concerned, however, a large total backlog may not be a convincing enough barometer of the future. As was pointed out in the discussion of the construction industry, high activity in one region may not be parallel in others, one category of work may be slow while others boom. High overall activity could be accompanied by depressions in some of the segments. What, then, is most important is the backlog breakdown by regions and by categories.

• Where the proposed jobs are—By regions the largest backlog is in the states west of the Mississippi (and east of the Rockies) ($17.7 billion), followed closely by the Middle Atlantic states ($15.8 billion). The Far West and Middle West states are about equal at $11.6 and $11.5 billion respectively. In the South the backlog reached $8.8 billion by the end of 1952, and in New England stood at $3.3 billion.

The largest increases regionwise in 1952 occurred in the South (19%) and in the Far West (15%). In dollars, of course, the big region—West of Mississippi—had the biggest increase, but the South and Far West were close behind.

The rapid growth in the South indicates that the step-up in new construction activity in this region will continue into 1953 and probably longer. The fast backlog buildup in the Far West is even more significant since 1952 contract volume there, as reported by Engineering News-Record, declined 3% below 1951.

Percentagewise these other increases occurred in the backlog in 1952: West of the Mississippi, 11%; Mid-West, 9%; Middle Atlantic, 6%. In New England, there was practically no increase in the backlog during the year.

• $456 per person—But large and promising as these totals and increases are, they become even more meaningful when examined in the perspective of per capita values. For example, the Far West states have the highest per capita backlog, $696—more than 50% above the U. S. average of $456. The big reason for this is that these states, which contain only 11% of the population, account for 37% of the nation's backlog of earthwork, irrigation and drainage projects, as well as 18% of the public buildings backlog, most of which is for new

(Continued on page 74)

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Fairbanks — Philpott Equipment Co.

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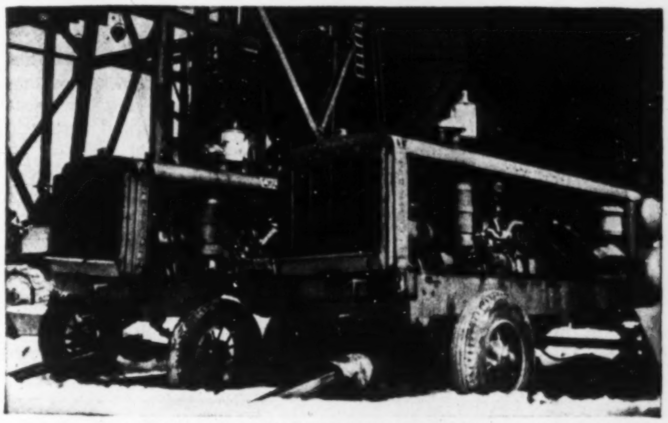

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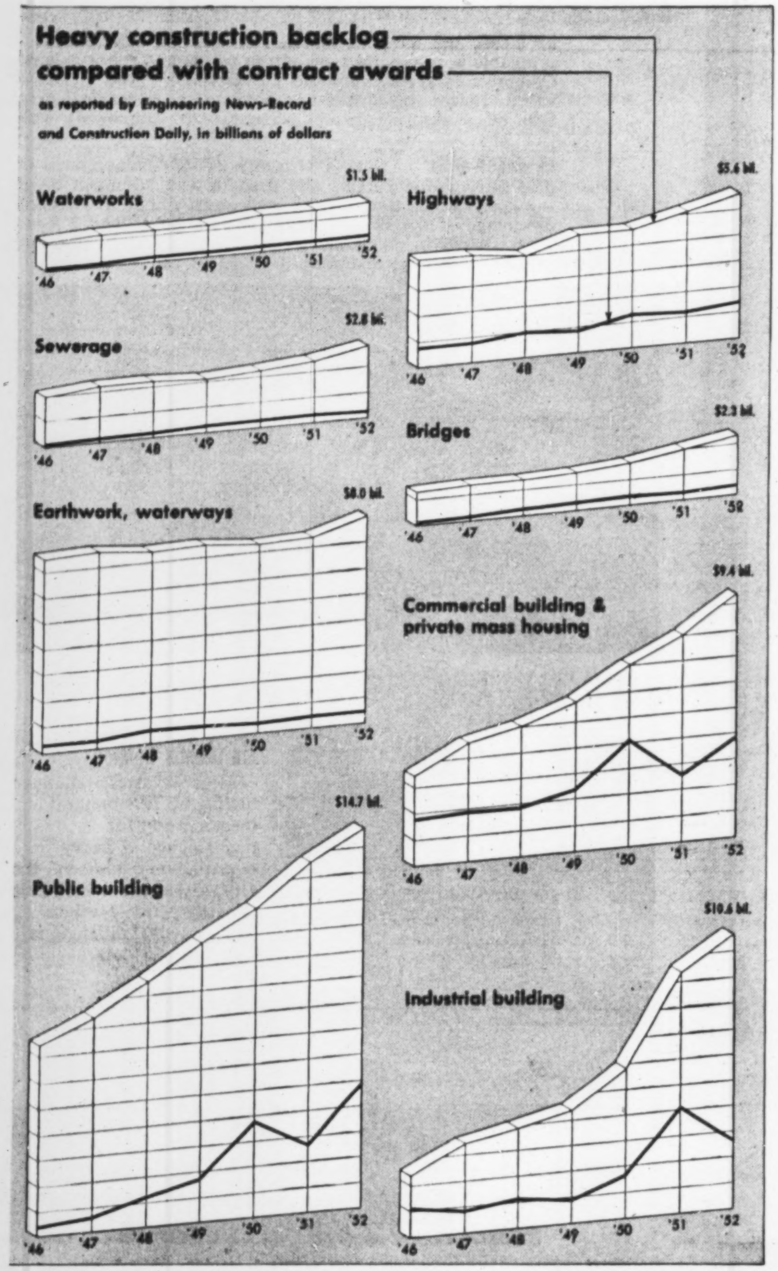
Close behind the Far West are the states in the west of the Mississippi region, which have a backlog averaging $613 per capita. Here again the explanation is found partly in the fact that these states, which have 19% of the total population, have 40% of the total backlog of earthwork, irrigation and drainage work. An equally large factor is the 43% of the private unclassified backlog, most of which is pipelines and transmission lines, occurs in this region.

The Middle Atlantic states have a smaller but still above-average backlog of $470 per capita. Then not only contain the highest percentage of the population (22%) but lead all other regions in several categories of work, accounting for 37% of the highway backlog; 32% of public unclassified projects; 31% of the commerical building and private mass housing backlog; and 30% of the public buildings backlog.

The South has the lowest per capita backlog, $275, although it is significant to note that the backlog is growing faster in this region than in any other. The Middle West with $380 per capita and the New England states with $359 are also below the average for the whole country.



EVERY TYPE of construction has a big backlog of jobs wanting to be done.

• Growth by type of construction—In categories of construction, the big backlogs are in public buildings ($14.7 billion) and in private industrial building ($10.6 billion). But this is only part of the story. A more significant comparison (with annual contract volume) shows that the sewerage backlog, one of the smallest in dollar volume, has more years of work in it than almost any other. Only earthwork, irrigation and drainage and private unclassified have more years of work—based on total contracts in '52.

Commercial building and private mass housing has the least years of work in the backlog. Nevertheless this was the fastest growing category in '52, swelling its backlog by 18%. This fast buildup heralds a high volume of contracts in '53 since most of these projects have a short lead time, and have been held back by government controls. All regions except New England increased their backlogs of commercial building and private mass housing in '52.

Sewerage is another fast-growing segment of the backlog. During '52 its backlog increased by 16% as work continued to pile up fast for the third straight year. This type of work went into contracts at an accelerated clip in the second half of '52, and the backlog should feed projects at an ever higher rate in 1953. Most of the increase in the sewerage backlog in '52 occurred in the western states, the Far West alone accounting for more than one-half of the total gain for the country, with another quarter being added by the states in the West of the Mississippi region.

Other types of construction which had a large backlog increase in 1952 are private industrial building, up 13%, private unclassified, up 14%, and bridges, up 12%.

The industrial building backlog grew fastest in the West of the Mississippi and in the Mid West. The Middle Atlantic had the smallest increase, while New England's backlog dropped.

The states in the West of the Mississippi region and the Far West were responsible for most of the gains in the private unclassified backlog, which is primarily pipeline and transmission line construction. Other regions showed small gains in this category.

• Road and bridge proposals—The bridge backlog owed most of its 12% increase to projects in the Far West and South, while the high-

$69 BILLION IN BACKLOG OF PROPOSED ENGINEERING CONSTRUCTION, DECEMBER 31, 1952

AS REPORTED TO ENGINEERING NEWS-RECORD

Covers proposed construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000

Table in thousands of dollars (000 omitted)

Total projects proposed during 1952..............$13,322,496,000
Net increase in backlog during 1952.............. 6,581,271,000

Projects removed from backlog when put under construction contract $6,741,225,000

	Public Works Projects								Private Projects			Construction				
States	Water-works	Sewer-age	Bridges†	Earth-work irr.-drain.	Streets and roads	Buildings, inc. pub. housing	Unclassi-fied	Federal govern-ment work	Industrial buildings	Commercial buildings & housing	Unclassi-fied	Private	Public	1952 Total	1951 Total	% changes '51-'52
UNITED STATES																
1952	**1,533,422**	**2,761,752**	**2,265,826**	**7,982,945**	**5,614,063**	**14,737,432**	**6,633,557**	**13,069,477**	**10,592,619**	**9,438,819**	**7,167,608**	**27,247,861**	**41,480,182**	**68,728,043**	....	+11
1951	1,431,932	2,371,785	2,030,245	7,444,277	5,128,941	13,569,140	6,507,329	12,349,011	9,400,276	7,993,476	6,269,371	23,715,971	38,430,801	....	62,146,772	......
% Change	+7	+16	+12	+8	+9	+9	+2	+6	+13	+18	+14	+15	+8	**+11**	....	......
NEW ENGLAND																
Me.	567	4,253	4,437	1,373	53,459	48,712	79,378	66,255	12,531	16,145	11,244	39,920	192,179	**232,099**	208,964	+11
N. H.	3,373	5,052	37,401	1,051	9,523	33,198	62,074	57,651	7,462	17,820	61,053	86,335	151,672	**238,097**	236,742	+ 1
Vt.	1,520	1,822	160	81,376	5,649	19,475	6,174	85,995	1,670	6,110	613	8,393	116,176	**124,569**	118,607	+ 5
Mass.	41,735	67,744	86,211	30,215	182,738	576,172	225,503	236,221	52,566	78,693	87,006	218,265	1,210,318	**1,428,583**	1,361,031	+ 5
R. I.	7,298	32,992	36,555	1,784	58,709	88,330	26,358	59,871	8,446	46,650	8,109	76,705	238,526	**315,231**	306,406	+ 3
Conn.	16,515	27,425	33,098	82,839	193,561	318,026	48,554	129,966	97,427	168,829	17,427	283,913	719,788	**1,003,701**	1,087,447	− 8
1952	**71,008**	**139,288**	**197,862**	**198,638**	**503,639**	**1,083,913**	**448,041**	**635,959**	**180,102**	**334,247**	**185,452**	**713,531**	**2,628,659**	**3,342,190**	....	+ 1
1951	70,760	133,539	178,761	199,747	271,540	1,063,913	434,819	675,349	385,973	376,613	203,532	979,848	2,339,349	....	3,319,197	......
% Change	0	+4	+11	−1	+85	+2	+3	−6	−53	−11	−9	−27	+12	**+1**	....	......
MIDDLE ATLANTIC																
N. Y.	235,987	372,575	225,578	197,552	711,299	2,406,132	1,294,367	465,474	495,468	1,369,216	144,105	2,009,115	5,443,164	**7,452,279**	7,109,167	+ 5
N. J.	68,272	73,768	121,948	22,618	357,210	500,789	230,403	228,567	282,100	332,648	98,096	712,844	1,375,008	**2,087,852**	1,855,499	+13
Pa.	79,225	187,366	189,021	236,065	635,811	790,827	390,351	427,824	541,726	830,889	191,597	1,569,011	2,503,867	**4,072,878**	3,938,145	+ 3
Md.	33,925	21,725	14,625	26,146	300,884	361,587	96,892	255,650	149,656	206,125	84,528	440,309	855,784	**1,296,093**	1,210,081	+ 7
D. C.	6,015	6,542	63,694	2,500	24,355	297,438	112,931	299,081	749	94,208	1,694	96,651	513,475	**610,126**	478,192	+28
Del.	1,511	9,641	10,829	15,652	21,077	44,959	20,512	43,568	42,129	72,380	36,933	151,442	124,181	**275,623**	240,571	+15
1952	**424,935**	**671,617**	**625,695**	**500,533**	**2,050,636**	**4,401,732**	**2,145,456**	**1,720,164**	**1,511,828**	**2,905,466**	**556,953**	**4,979,372**	**10,815,479**	**15,794,851**	....	+ 6
1951	436,586	660,690	569,876	374,183	2,075,447	4,132,787	2,152,338	1,500,939	1,387,811	2,555,236	486,701	4,440,547	10,391,108	....	14,831,655	......
% Change	−3	+2	+10	+34	−1	+7	0	+15	+9	+14	+14	+12	+4	**+6**	....	......
SOUTHERN																
Va.	7,710	52,661	26,221	95,883	65,969	270,583	134,566	299,271	181,820	77,338	108,281	367,439	653,593	**1,021,032**	748,518	+36
W. Va.	2,952	37,106	5,279	25,509	98,483	86,040	31,462	68,480	91,300	14,659	31,339	137,473	286,656	**424,129**	296,927	+43
N. C.	22,656	23,712	10,614	201,036	29,675	191,354	43,265	303,150	189,838	81,577	104,749	376,442	522,034	**898,476**	714,190	+26
S. C.	17,201	16,431	10,437	102,399	17,865	104,517	165,109	273,078	156,008	64,794	48,278	269,080	433,959	**703,039**	646,775	+ 9
Ga.	18,368	21,917	17,855	16,521	42,030	286,446	13,976	71,200	88,213	75,553	69,174	233,690	416,363	**650,053**	475,366	+37
Fla.	32,725	58,667	46,251	60,354	311,236	223,573	182,188	210,677	134,598	284,900	78,282	498,030	914,744	**1,412,774**	986,918	+43
Ala.	22,377	18,119	11,921	59,357	24,943	174,438	31,962	150,157	109,080	45,763	68,438	223,281	343,117	**566,398**	497,984	+14
Miss.	10,704	9,521	1,411	27,879	9,425	85,941	34,504	66,264	52,988	24,615	175,203	252,806	179,385	**432,191**	487,168	−11
La.	26,230	25,234	76,411	105,258	18,799	165,617	88,140	149,059	269,940	70,054	312,399	653,192	504,890	**1,158,082**	1,130,815	+ 2
Ky.	11,349	23,338	16,135	40,615	3,186	159,430	17,184	112,410	140,234	65,389	74,659	280,282	271,237	**551,519**	455,706	+21
Tenn.	10,098	51,903	33,130	85,642	26,879	324,299	74,681	269,239	125,451	124,641	105,506	355,691	606,539	**962,230**	922,544	+ 4
1952	**182,370**	**338,609**	**255,665**	**820,453**	**648,490**	**2,072,238**	**817,037**	**1,972,985**	**1,539,470**	**929,283**	**1,176,308**	**3,647,406**	**5,132,517**	**8,779,923**	....	+19
1951	148,792	319,008	221,311	759,352	245,153	1,726,452	803,796	1,872,110	1,351,331	692,534	1,095,182	3,140,892	4,222,019	....	7,362,911	......
% Change	+23	+6	+16	+8	+165	+20	+2	+5	+14	+34	+7	+16	+22	**+19**	....	......
MIDDLE WEST																
Ohio	72,813	241,638	187,358	56,514	522,559	665,987	166,968	167,782	983,089	551,127	359,438	1,898,620	1,908,871	**3,807,491**	3,371,581	+13
Ind	22,301	81,538	69,459	70,677	65,103	229,804	45,508	101,771	757,439	155,587	142,162	1,055,628	583,950	**1,639,578**	1,253,954	+31
Ill.	126,060	160,401	128,682	201,886	353,047	677,735	239,694	285,871	764,590	442,464	210,312	1,426,728	1,878,143	**3,304,871**	3,323,215	− 1
Wis.	11,983	17,610	29,465	3,055	48,425	159,361	20,435	24,678	162,921	104,249	36,737	304,107	290,134	**594,241**	538,467	+10
Mich.	33,888	172,045	155,754	35,771	123,201	779,988	122,414	168,983	287,543	326,923	156,437	770,903	1,423,061	**2,193,964**	2,108,253	+ 4
1952	**267,045**	**673,232**	**570,718**	**367,903**	**1,112,335**	**2,512,875**	**595,019**	**749,085**	**2,955,582**	**1,580,350**	**905,086**	**5,455,986**	**6,084,159**	**11,540,145**	....	+ 9
1951	270,893	616,722	562,278	342,811	1,147,629	2,377,562	732,657	654,336	2,541,209	1,188,706	815,003	4,558,765	6,036,705	....	10,595,470	......
% Change	−1	+9	+2	+7	−3	+6	−19	+14	+16	+33	+11	+20	+1	**+9**	....	......
WEST OF MISSISSIPPI																
Minn.	20,182	36,057	13,578	3,215	12,848	146,437	31,404	24,442	411,230	81,157	121,060	614,972	262,196	**877,168**	515,681	+70
Iowa	5,065	16,274	7,899	87,108	7,801	69,507	4,687	94,111	43,947	34,376	169,902	249,035	197,531	**446,566**	540,000	−17
Mo.	36,768	76,752	58,901	200,223	292,354	412,297	105,837	420,785	157,356	207,842	253,538	621,085	1,180,783	**1,801,868**	1,667,314	+ 8
Ark.	19,649	25,905	30,260	281,949	28,570	113,880	76,700	343,912	293,697	23,027	183,448	500,387	576,698	**1,077,085**	1,029,324	+ 5
N. D.	3,746	3,720	3,643	149,040	223	16,033	3,733	153,611	2,135	5,031	41,992	52,658	176,638	**229,296**	250,133	− 8
S. D.	3,096	2,423	480	188,228	2,323	9,458	15,950	205,056	1,890	10,087	42,578	54,555	221,958	**276,513**	276,407	0
Neb.	12,155	31,323	11,603	149,140	13,554	153,404	78,558	237,082	29,751	32,104	84,948	147,803	448,737	**596,540**	530,480	+12
Kan.	24,020	15,777	13,747	150,496	5,361	171,900	88,539	277,830	193,648	39,783	237,840	471,271	469,840	**941,111**	866,246	+ 9
Okla.	24,561	22,525	15,479	280,174	42,020	150,242	98,151	345,172	102,013	39,995	203,248	345,745	632,663	**978,408**	902,553	+ 8
Tex.	238,686	260,450	90,332	861,266	155,035	1,138,500	777,533	1,373,841	2,026,920	1,394,734	1,360,994	4,784,484	3,519,966	**8,304,450**	7,228,778	+15
Mont.	7,323	4,846	66,813	239,701	17,543	55,768	23,005	256,843	34,175	17,951	17,541	69,667	414,999	**484,666**	547,538	−11
Wyo.	4,957	2,951	857	197,825	....	19,737	10,489	210,172	52,810	7,767	51,016	111,593	236,816	**348,409**	338,644	+ 3
Colo.	34,632	10,556	6,649	321,927	69,902	134,298	32,761	389,055	36,758	56,666	144,513	237,937	610,725	**848,662**	862,795	− 2
N. M.	4,250	5,786	1,497	48,438	613	75,332	69,551	144,951	47,400	32,541	169,624	249,615	205,417	**455,032**	396,229	+15
1952	**439,090**	**515,345**	**321,738**	**3,158,730**	**648,147**	**2,666,793**	**1,416,898**	**4,476,863**	**3,433,730**	**1,983,061**	**3,082,242**	**8,510,807**	**9,154,967**	**17,665,774**	....	+11
1951	351,993	419,937	306,274	3,096,008	715,189	2,503,205	1,344,417	4,409,754	2,903,172	1,645,791	2,666,136	7,226,083	8,726,039	....	15,952,122	......
% Change	+25	+23	+5	+2	−9	+7	+5	+2	+18	+20	+16	+18	+5	**+11**	....	......
FAR WEST																
Idaho	3,007	6,023	5,595	120,298	30,744	73,345	31,897	188,072	11,828	16,546	192,192	220,566	270,909	**491,475**	558,976	−12
Utah	15,897	12,143	3,457	133,451	22,356	38,403	15,496	142,910	13,261	36,787	93,996	144,044	241,203	**385,247**	347,600	+11
Ariz.	6,360	4,137	....	581,550	26,833	28,075	68,933	645,912	58,080	52,905	110,000	220,985	715,888	**936,873**	870,988	+ 8
Nev.	1,263	1,734	4,453	36,435	25,173	20,152	12,103	23,997	18,500	12,970	30,750	62,220	101,313	**163,533**	146,819	+11
Wash.	49,318	27,761	107,456	978,432	203,244	619,928	249,200	1,224,839	184,221	208,431	134,821	527,473	2,235,339	**2,762,812**	2,193,896	+26
Ore.	5,304	13,135	25,796	209,400	25,189	65,130	9,202	244,056	97,696	25,797	119,812	243,305	353,156	**596,461**	567,680	+ 5
Calif.	67,825	358,728	147,391	877,122	317,277	1,154,848	824,275	1,044,635	588,321	1,352,976	579,996	2,522,166	3,746,593	**6,268,759**	5,399,458	+16
1952	**148,974**	**423,661**	**294,148**	**2,936,688**	**650,816**	**1,999,881**	**1,211,106**	**3,514,421**	**971,907**	**1,706,412**	**1,261,567**	**3,940,759**	**7,664,401**	**11,605,160**	....	+15
1951	152,908	221,889	191,745	2,672,176	673,983	1,765,221	1,039,302	3,236,523	830,780	1,534,596	1,002,817	3,369,836	6,715,581	....	10,085,417	......
% Change	−3	+91	+53	+10	−3	+13	+17	+9	+17	+11	+26	+17	+14	**+15**	....	......
CANADA																
1952	**188,476**	**254,511**	**337,361**	**557,489**	**1,507,196**	**1,722,850**	**1,224,407**	**632,795**	**1,801,188**	**1,027,186**	**2,482,957**	**5,311,605**	**5,792,016**	**11,103,621**	....	+5
1951	189,440	234,765	323,589	574,852	1,505,282	1,633,867	1,180,220	573,618	1,728,363	785,180	2,465,563	4,979,380	5,641,741	....	10,621,121	......
% Change	−1	+8	+4	−3	**0**	+5	+4	+10	+4	+31	+1	+7	+3	**+5**	....	......

† Includes Private

way backlog, up 9% in '52, showed almost all of its gains in the South. Both of these figures, it should be emphasized, badly understate actual road growth prospects. This is particularly true of the highway category because only specific projects are included in the backlog, and some state highway departments do not break down their future programs into separate identifiable jobs.

The inadequacy of the backlog figures in measuring road plans is evident when it is noted that the total for highways and bridges is only $7.8 billions. Since annual road construction expenditures have been in the neighborhood of $2.5 billion, the backlog reflects only three years of work, far below some of the other categories and obviously not a true reflection of the vast amount of forward highway planning that is being done.

Another measure of long-range highway prospects is contained in the the estimate of the American Association of State Highway Officials that the federal aid system alone requires an expenditure of $32 billion to bring it up to acceptable standards. As much as another $10 billion could be assumed for the remainder of the total highway system. Much bigger annual highway programs than we have ever been accustomed to will be necessary if these improvements are to be made.

• Some other Public Works—The public buildings backlog was upped 9% during the year by new projects in all parts of the country. The South led the way, with the Middle Atlantic and Far West states also showing large gains. School and hospital construction, included in this group, will remain a big source of new construction in the years ahead.

Waterworks and earthwork, irrigation and drainage each rose 7% during '52. States in the West of the Mississippi region and in the South went far ahead of other regions in adding to the waterworks backlog.

All regions boosted their backlogs of earthwork, irrigation and drainage work in 1952, but the largest gains were in the Far West and West of the Mississippi. This type of construction also had the largest dollar increase of any type of public works, excluding buildings.

Finally, public unclassified projects, primarily federal airports and other military or naval construction, had the smallest backlog increase (2%) in 1952. The big buildup in this category occurred a year earlier—in 1951. That year this backlog piled up a thumping 38% increase, and much of that work will be coming out of the backlog in '53 as another big year in federal airport construction gets under way.

All in all there can be little doubt that such a large reservoir of announced plans for construction expenditures, both by regions and by class of work, constitutes one of the most significant factors in an appraisal of the future. And when backed up by signs of general business stability it lends further assurance to the belief that there is a strong foundation under construction prospects in the years ahead.

• But there are pitfalls—To assume, however, that construction prosperity is a certainty that will come about automatically would be a mistake. It is much more certain that there will be economic and political obstacles that only hard work and intelligent planning can overcome, despite the strong factors favoring construction growth pointed out above. And among these obstacles are apt to be numbered rising costs, a decrease in the rate of family and household formation, and perhaps the emergence of a feeling that the nation's capital facilities are overbuilt to the extent that a rest period on such things as new factory building and river development would not be amiss.

Construction costs today are twice as high as they were at the beginning of the war, and during the past five years alone have increased 25%. Of late there has been a tendency for costs to level off, but there is no sign that this is a prelude to a drop. Indeed, the practice of paying high wages is so firmly implanted in the economy that it would be unsafe to count on any decrease in construction costs in the foreseeable future. Some material prices, under the pressure of increased production from new manufacturing facilities, might be expected to ease, but lumber, which has provided much of the fuel for cost increases over the past few years, offers no hopes in this regard. On balance, the materials component of construction costs might be expected to remain relatively stable, with wages rising slowly but surely.

Looking back over the last 30 years there have been several periods of cost stability, but only two instances when construction costs actually went down substantially—in 1921 and 1931, as phenomena of economic depression. Unless, then, one can foresee a depression, there is little reason to count on more than cost stability at present high levels.

A more realistic view would be to assume that construction costs will continue to rise. And with basic conditions as they are, and discounting the possibility of a great war, an annual rise of between 2 and 5% could readily occur.

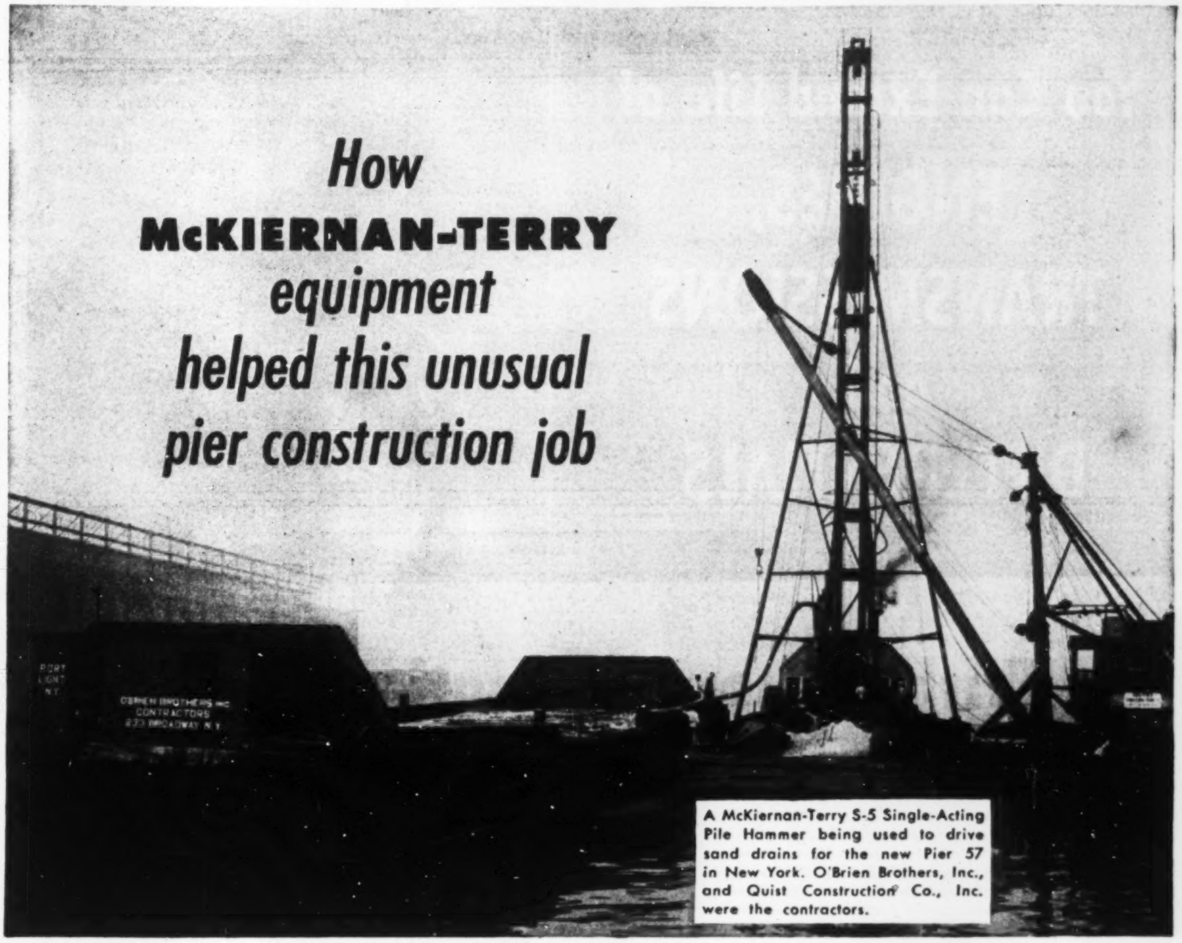
• Productivity the answer—Such a modest rate of cost increase is more to be feared as an obstacle to construction growth than sudden large increases, which may actually stimulate construction by causing buyers to rush into the market to beat the next cost rise. The only antidote to slowly rising costs is a parallel rise in productivity. Hard work and intelligent planning are the key to improved productivity, and it is these that must be counted on to overcome the obstacle of rising construction costs in the period after the defense boom ends.

• Fewer new families—Another deterrent to construction growth in the years immediately ahead will be a slowdown in the rate of family formation. This goes back to the low birth rate in the depression years of the '30's, which results in fewer persons of marriageable age today. It is estimated that new families will average only 560,000 annually over the next four years as compared to the peak in 1949 of over 1,200,000. Household growth will slump even more from recent peaks than marriages. Households increased very rapidly when economic conditions made it possible for families that were living together to separate and form homes of their own. This "undoubling" process has just about been completed. For the years ahead it is family growth by marriage that will supply most of the new households—and the nucleus of the housing market.

• But larger families—Obviously, however, to maintain an output of about one million new housing units a year will require something more than the newly formed families even though, as some maintain, an increasing percentage of these families will have to be provided with new housing because of the increasing number of older persons who will maintain their households longer than they have in the past. One favorable factor is the increasing size of families, which will make many small houses inadequate; more babies mean more bedrooms.

Theoretically, the 22,500,000 increase in population in the 1950-1960 decade would require 5,600,000 new units on the assumption that the present average of four persons per household is to be maintained. But two million of these houses have aleardy been built in the past two years. That leaves 3,600,000 units for the next

(Continued on page 79)



How McKIERNAN-TERRY equipment helped this unusual pier construction job

A McKiernan-Terry S-5 Single-Acting Pile Hammer being used to drive sand drains for the new Pier 57 in New York. O'Brien Brothers, Inc., and Quist Construction Co., Inc. were the contractors.

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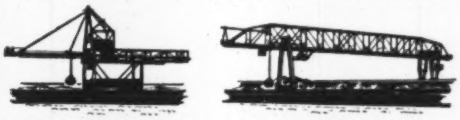

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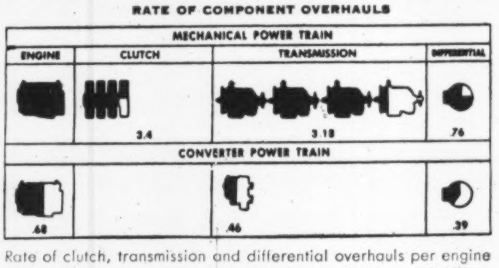

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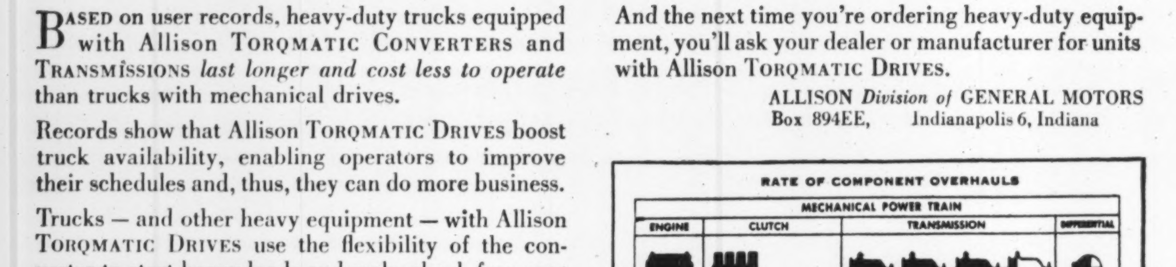

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8 years or 450,000 a year. To this can be added about 275,000 units a year required to replace truly worn-out dwellings and those destroyed by fire and other causes.

The total of this somewhat optimistic estimate is 725,000 units a year—still some distance from the million required to keep up the existing pace. Where can the additional units be found? The best source seems to be in the elimination of obsolete housing that can still be lived in, but only at substandard levels. There is a vast market here, perhaps from 3 to 6 million units. But to crack it will require great zeal and determination. As a consequence slum clearance programs and urban redevelopment schemes will have to be pushed with vigor if the housing element in the construction picture is not to be an obstacle to over-all construction growth after the defense boom ends.

• Watch factories and roads—Construction growth can also be stunted should industry not keep its new capital expenditures at a high rate, or in an attempt to reduce taxes we sacrifice some of the public development work that aids greater productivity and contributes to an expanding standard of living. There is no present indication that this state of mind will develop, a possibility that must be taken into account in assessing the future realistically.

Finally, one of the greatest pitfalls that threaten future construction prospects is a continuation of the present procrastination on highway improvements. Without great exaggeration inadequate highways can be regarded as a national menace as threatening as inadequate atomic energy facilities—and worthy of being attacked with the same concentration of effort and expenditure of money. Indeed, unless this is done, and done successfully there is little chance that construction can attain the volume that the times demand of it.

• A challenging period—Here then has been drawn a balance sheet of the strengths that construction has at its disposal and the weaknesses with which it must contend in the most challenging period of its history. It cannot be denied that war and the preparations for war have sparked the unprecedented activity of the recent past. This is in the historic patten, and it likewise historically true that corrective recession has followed. Therein lies the challenge—to reverse historical precedent. Never before were the opportunities for success more promising—not only intrinsically, but because the consequences of failure are so appalling. Construction after the defense boom has both economics and psychology on its side.

• 1. Look to business—In reminding ourselves of what is available to keep construction at a peak of performance in the years ahead there are first the strong forces of general business. It can look forward to about a $40-billion annual rate of defense spending—a tremendous stimulus even though nearly 30% below what seems destined to be the high point. It can draw on liquid assets in the hands of individuals and its own coffers of more than $200 billion. There is more than an even chance that it can count on improving stability of prices and of the value of money—less probability of inflation. Finally, coupled with the unquestioned demand of every American to see his standard of living continuously improve, is the businessman's acceptance of the theory that a high and widely dispersed purchasing power—made possible by high and stable wages and every-lower selling prices—is the key to satisfying this demand. Moreover, through the recent examples of improving productivity by means of more efficient industrial plant the businessman has gained confidence in his ability to maintain the wages and to lower the prices.

• 2. Look to people—Another and even more basic source of strength is the pressure of increasing population. Only a few years ago the great concern was over a static population which could support itself only by "taking in one another's washing" instead of by expansion of jobs and opportunities. So rapidly have conditions changed that the consequences are still not widely comprehended.

More than anything else, this increasing population is the factor best calculated to reverse history—in other words, permit a peacetime economy and a construction growth as dynamic as any that has occurred under the stimulus of war.

• 3. Look to proposed jobs—Thirdly, and basically a reflection of the conditions cited above, is the continuously increasing backlog of proposed construction projects. By every kind and in every region, these projects have been accumulating until their construction could mean five years of activity at present record levels.

Some of the heavy industries may have discounted their future growth by compressing needed expansion into the past few years, but light industry, which manufactures the bulk of standard-of-living items, is still far behind in new plant construction. Commercial buildings are grossly inadequate, and hospitals and schools must be built in great numbers. Inadequate highways are throttling every kind of national growth, as witness the increase in motor vehicles from 31 million in 1945 to nearly 54 million at present, with meantime only a meager improvement in the roads on which they run. The backlog of proposed construction projects suggests that all of these deficiencies are under pressure of elimination.

• 4. Look to initiative—None of this continuance of prosperity after the defense boom lessens, however, can be had for the wishing, despite the good underlying conditions. Higher costs, not offset by increasing productivity, can dry up the market. The certainty of a reduction in the rate of new household formation for the next few years—reflecting the low birth rate of the '30's—will require concentration on the replacement of inadequate housing for the existing households if home construction is not to decline. Any tendency to turn defeatist on expanding capital plant in the belief that we are overbuilt must also be avoided, as it can if account is taken of the fact that actual physical expansion has been much less than the large dollar expenditures would lead one to believe.

• 5. Look to private enterprise—Finally, those who are to build the facilities in the years ahead must also count on overcoming competition from within their own ranks, for designers and contractors alike will be under compulsion to improve their products and increase their efficiency.

After the defense boom, in brief, construction will have to depend more on private individual enterprise than in any time during the past twenty years. When President Truman's three-man Council of Economic Advisors, in their final report, agreed on this point, but divided on whether private enterprise could do the job without extensive government help, they pointed up the challenge. Two of the economists, reflecting the philosophy of the past two decades, foresaw the need for economic controls, continued high taxes and a great public works program to avoid a recession. The third economist dissented, in the belief that private enterprise had the power and resiliency within itself to avert any recession.

It might be argued that construction would benefit, whichever of these points of view prevailed—except that no amount of emergency public works is enough to support an expanding economy. That can only be done when all sectors of business are straining to satisfy the demands for an ever higher standard of living

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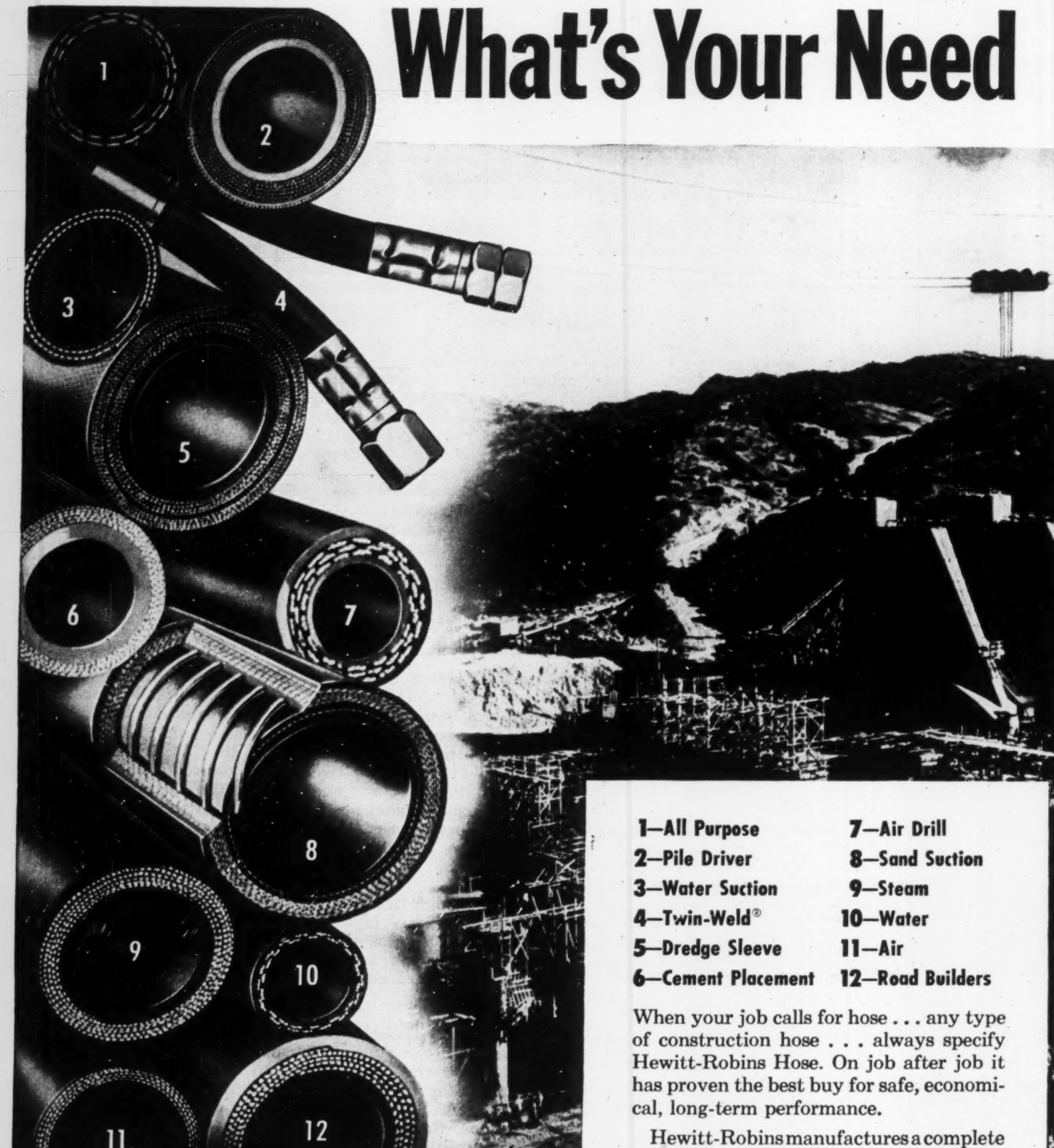

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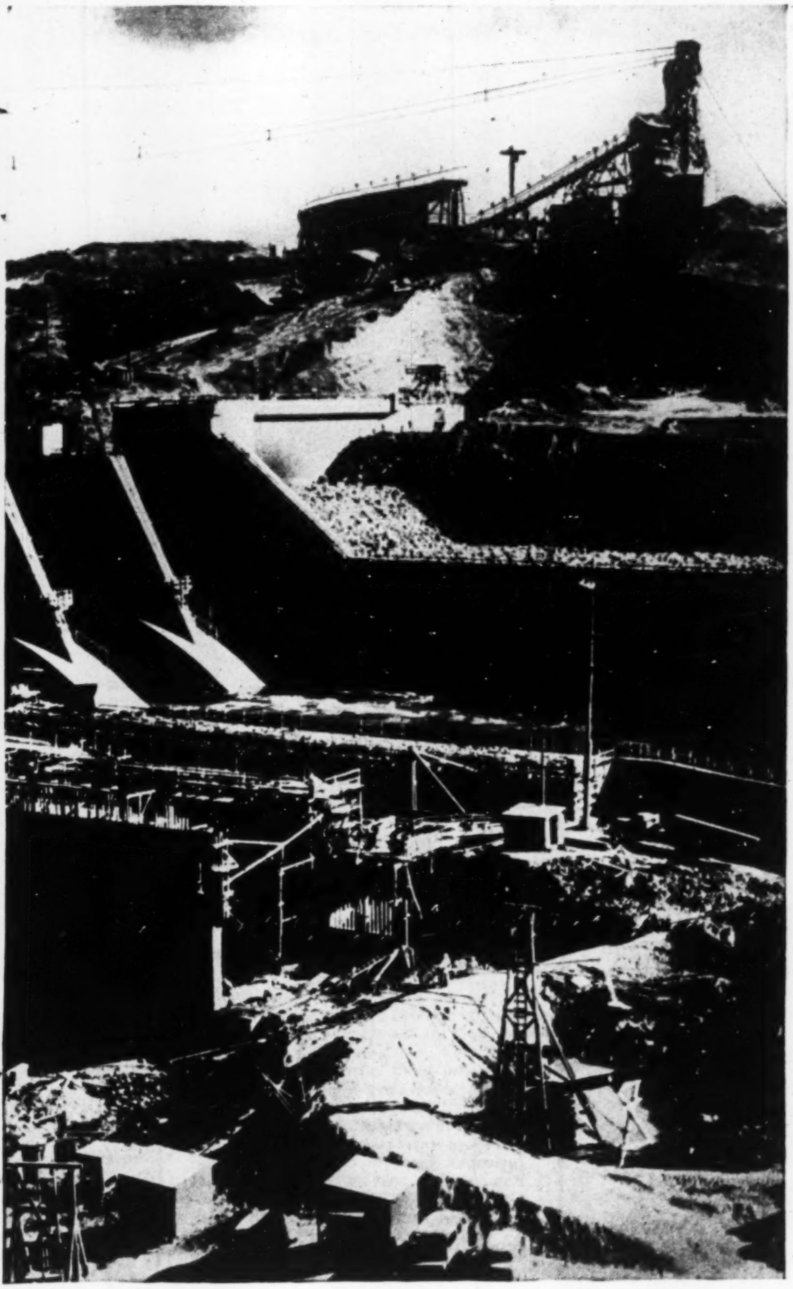

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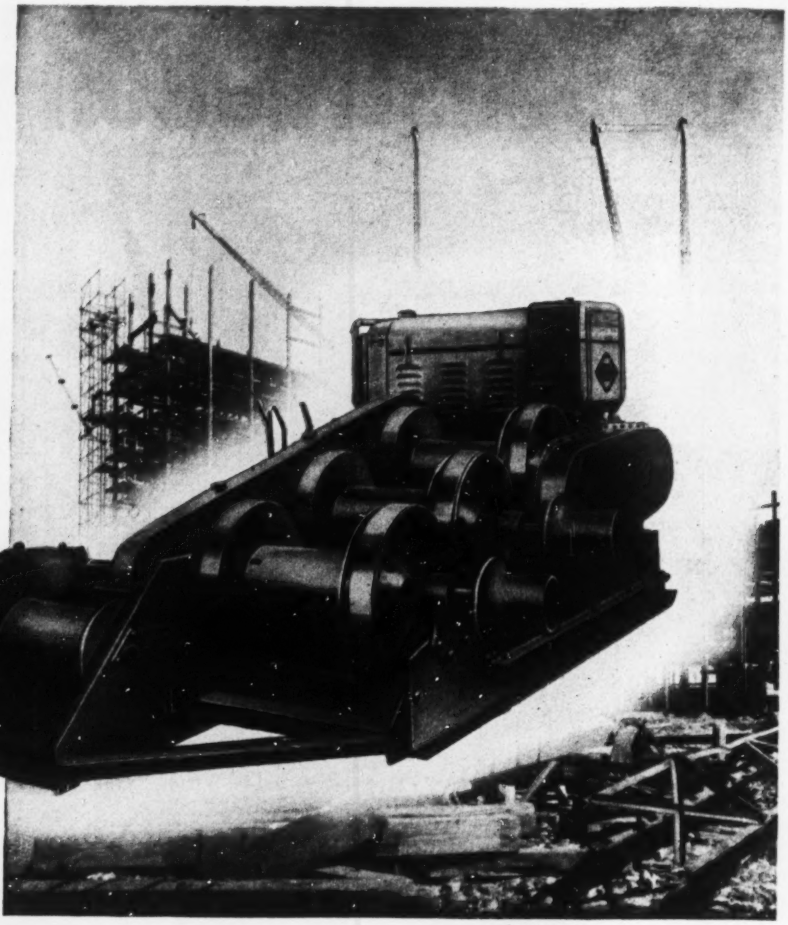

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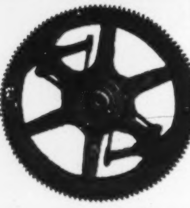

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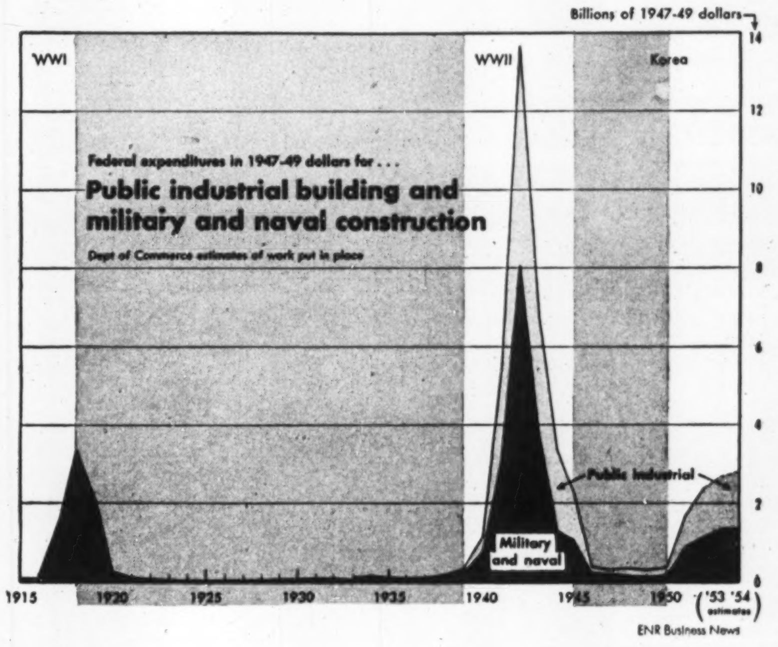

Spending on U. S. military construction will continue at the present high level through the calendar year 1954. Expenditures in 1953 will run close to $2.5 billion, and no slackening is in sight in the rate of cash outgo during 1954.

On Jan. 1, the Defense Department had on hand more than $5.5 billion of unspent cash. Most of that money had not yet been obligated. The Army, Navy and Air Force still had to let contracts for nearly $4 billion of the money in the till.

The spending rate has been picking up. In the six months of 1950, following the Korean decision of June 25, that year, it averaged less than $20 million a month. During the next calendar year, 1951, spending stepped up to an average of more than $120 million a month. In the year just ended, the outgo averaged better than $150 million monthly.

Scheduled spending for the six months that started Jan. 1 calls for the outlay of $1.34 billion by June 30. That requires a stepup to an average of more than $200 million a month for the first half of the current calendar year.

Only once in the last two years have the three armed services spent as much as $200 million in a single month for construction of military and Naval public works. In their peak month—June, 1952—they paid out more than $222 million to contractors for construction put in place.

New projects will have to be started fast if military construction spending is to hit the scheduled rate in the first six months of this year; contract awards are due to reach their peak this spring (see also p. 00). But new jobs rarely are placed under contract as rapidly as hoped; that fact makes it doubtful whether the military services can step up their average construction spending to more than $200 million a month for the half year ending June 30.

• Money in the bank—Even if the Defense Department pushes up its construction spending to consume the scheduled quota by June 30, it will still have more than $4 billion of its present cash-in-the-bank, left over for spending in the second half of 1953 and the twelve months of 1954. In theory, therefore, if not in actual practice, the military services could continue a spending rate of $200 million a month to the end of 1954 out of money already in hand.

But they probably won't have to do it without help of additional cash. Congress seems likely to vote more military construction money for fiscal 1954—and more again for fiscal 1955. The Defense Department already has asked—through the Truman budget—for nearly $750 million of construction money for fiscal year 1954 that starts July 1. Of that sum, $700 million goes to the Air Force.

And that is not the only request for funds Congress will receive at this session. Some time soon, Defense will get the proposed programs of the three military services, pulled together and properly balanced, to make a supplemental request for fiscal 1954. The Defense Secretary's Director of Installations, Frank R. Creedon, and his staff, have been working for months on the fiscal 1954 program (ENR Nov. 6, p. 21).

• May not ask cash—This forthcoming request may not ask for any additional cash. The three services, in general, will have enough money left over on June 30 to carry forward their full construction programs through fiscal 1954 to June 30 of next year. They get their military construction money in lump-sum appropriations, and may spend it with complete flexibility on any projects that Congress has authorized. Thus, the services can spot the money where it will do the most good, in the light of the changing military outlook at any time.

But the request certainly will ask Congress to authorize more projects both at home and abroad. The Defense Department may ask another billion dollars of authorizations for the Air Force and possibly half as much for the Army and Navy.

With President Eisenhower standing behind it, Congress apparently is not going to refuse these requests. Congressmen will vote the cash money and the authorizations that Defense says are needed.

• Awards top expenditures—As is normal in an expansion program, contract awards in the last two and one-half years have run ahead of expenditures. Since Korea, Defense has signed construction contracts for some $4.8 billion of new work.

On Jan. 1, the Defense Department had nearly $4 billion of uncommitted cash-in-the-bank left to obligate. All the services hoped to do almost as well as the Navy (ENR Sept. 4, p. 74), in getting their shares of this unobligated money sewed up in signed contracts by June 30 or soon after.

To catch up on its awarding schedule, the Air Force would have to place construction contracts at an average rate of $350 million per month during the first half of 1953, Jan. 1 to June 30. The Air Force had hoped to place an average of $250 million a month for the current fiscal year, July 1, 1952, to June 30, 1953. But it was able to award only $670 million in the six months from July to Dec. 31.

• Air Force, Army behind—That the Air Force can hit high peaks in contract awards is shown by its top month of June, 1951, when new contract obligations in the 30-day period came close to $400 million. But there are no more $300-million Moroccan airbase contracts in the immediate offing, and the Air Force will have difficulty in maintaining even a $250-million average monthly rate of contract awards during the six months of 1953 from Jan. 1 to June 30.

Army contract awards are as much behind schedule as Air Force. In the two and one-half years since Korea, the Army placed a little more than a billion dollars of new construction work under contract.

The awards it issued during the six months, July 1 to Dec. 31, 1952, totaled less than $180 million, averaging a total of not quite $30 million a month.

On Jan. 1 of this year, the Army had nearly $1.1 billion under the mattress, waiting to be awarded. The Army Engineers have a hard fight ahead in trying to put that money to work at a contract award rate of even $50 million to $60 million a month.

Navy had its ship in better shape than either of the other services at the start of this calendar year. Since Korea, the Navy has awarded better than a billion dollars of new construction contracts; on Jan. 1 it had $600 million that the Bureau of Yards and Docks wanted to obligate within six to nine months.

The Navy had been averaging more than $40 million a month of new construction contracts in the half-year period, July 1 to Dec. 31, 1952. That rate of awards can be stepped up somewhat, but it would be a rugged optimist who would expect to get it all under contract in less than twelve months.

All the money mentioned here is let to contract and paid out by the military services.

The sums which are mentioned include no Mutual Security funds to finance construction by foreign nations of facilities for use abroad by our armed forces.

For example, this money won't supply any of the $310 million for U. S. Army supply bases in France and West Germany, nor any of the $550 to $600 million for Air Force bases, cited by Maj. Gen. Samuel D. Sturgis, Chief of Engineers, two weeks ago (ENR Feb. 5, p. 19). Bases of that kind, built by foreign governments—employing contractors of their own countries—for United States the use of, are paid for out of Mutual Security appropriations.

• Korea brought rise—Korea plunged the United States into heavy expansion of overseas installations. The trend shows up in year-to-year expenditures for military construction.

In calendar year 1950, the military services spent only 7% of their construction outlay overseas. In 1951, the ratio went up to 28% for new construction outside the United States, its territories and island possessions. And last year, 1952, the Defense Department paid out 38% of its construction expenditures for work which was done overseas.

Gross spending, of course, was mounting steadily at the same time. In 1950, $13 million out of a total of $184 million went for overseas construction; in 1951, the overseas portion was more than $250 million out of a $1,245-million total; and in 1952, the overseas slice of construction spending came to nearly $700 million of a gross outlay that totaled close to $1,830 million.

• War boosts industrial—In time of war or threatened war, federal industrial construction goes up rapidly along with military and naval public works. The accompanying chart shows this relation clearly. Practically all public industrial construction in recent years represents building of plants by the three military services and the Atomic Energy Commission to produce munitions and implements with which to wage war.

Since the secret inception of the Army Engineers' Manhattan District project in 1942, atomic energy plants have accounted for the major part of public industrial construction. In 1952, for example, expenditures on atomic energy projects accounted for 80% of all public industrial construction in the United States; the other 20% was paid out by the Army, Navy and Air Force.

• AEC to spend 90%—For the current calendar year, the AEC probably will spend on its projects about $1.5 billion, or nearly 90% of an estimated $1.7-billion total expenditure for all public industrial construction in the continental U. S. during the year 1953.

MILITARY AND NAVAL PUBLIC WORKS

Continental United States and Overseas
(millions of dollars)

		Army	Navy	Air Force	Total
Authorized					
Fiscal year 1951		584	618	1,331	3,533
Fiscal year 1952		1,474	855	3,544	5,873
Fiscal year 1953		328	257	1,813	2,398
Totals		2,386	1,730	6,688	10,804
Appropriated					
Fiscal year 1951		500	470	1,448	2,418
Fiscal year 1952		1,048	852	2,259	4,159
Fiscal year 1953		586	363	1,200	2,149
Totals		2,134	1,685	4,907	8,726
Obligated					
Fiscal year 1951		309	361	923	1,593
Fiscal year 1952		552	456	1,081	2,091
Fiscal year 1953	**July**	14	34	123	170
	August	22	55	111	189
	Sept.	38	46	135	220
	Oct.	45	51	94	191
	Nov.	29	32	104	165
	Dec.*	29	32	104	165
Unobligated as of Dec.		1,096	618	2,232	3,942
Expended					
Fiscal year 1951		75	124	235	433
Fiscal year 1952		341	379	1,091	1,812
Fiscal year 1953	**July**	28	29	71	128
	Aug.	28	30	121	179
	Sept.	50	35	85	170
	Oct.	49	38	84	171
	Nov.	42	32	69	143
	Dec.*	42	32	69	143
Unexpended as of 31 Dec.		1,479	986	2,082	5,547

* Estimated

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After all is said and done, the first function of a mortar is to form a good, tight *bond* with the brick. Upon this characteristic depend both the strength and the water-tightness of the wall. A good bond is particularly important in securing water-tight walls, because most cases of leakage are caused by the passage of water *between* the brick and the mortar.

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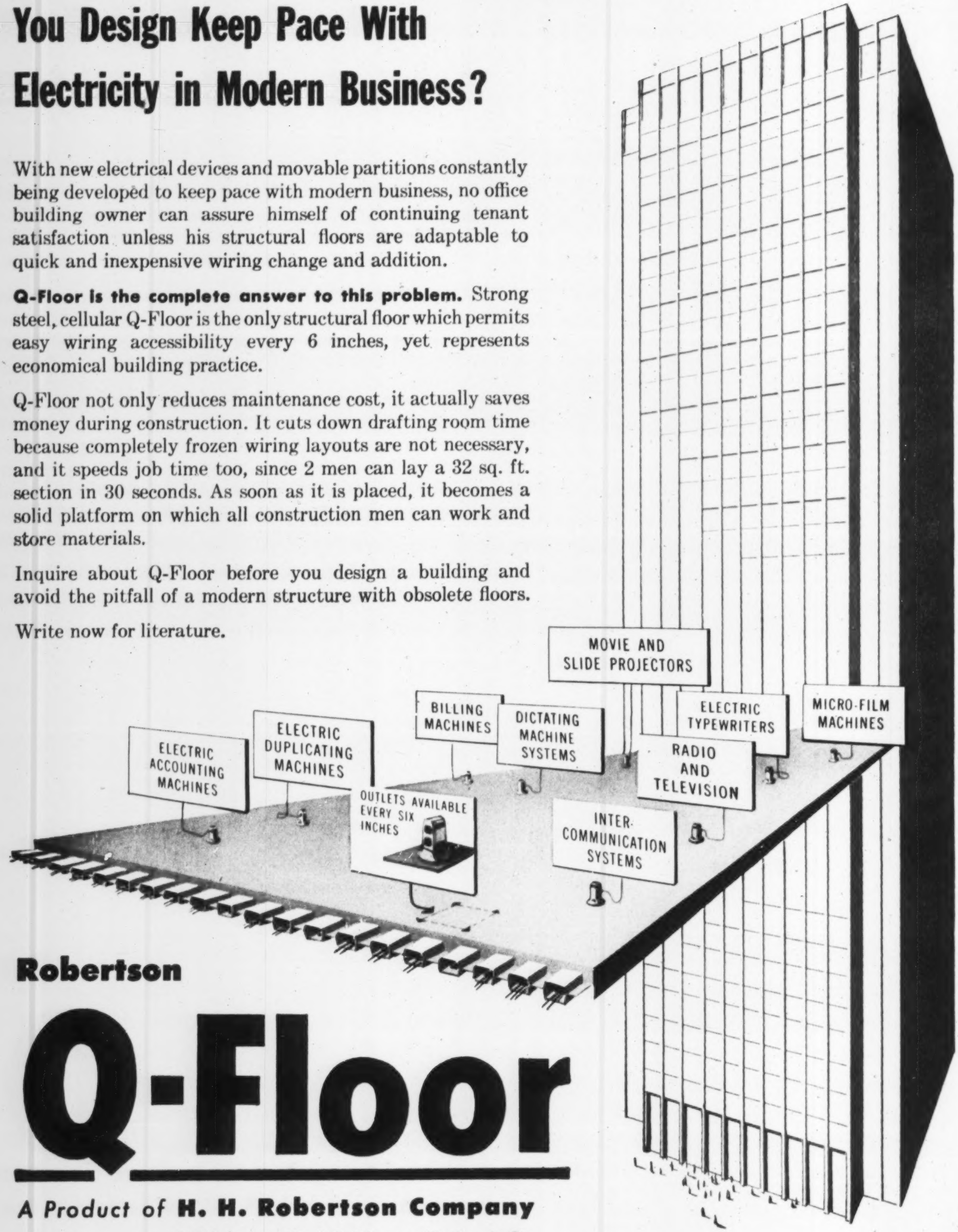
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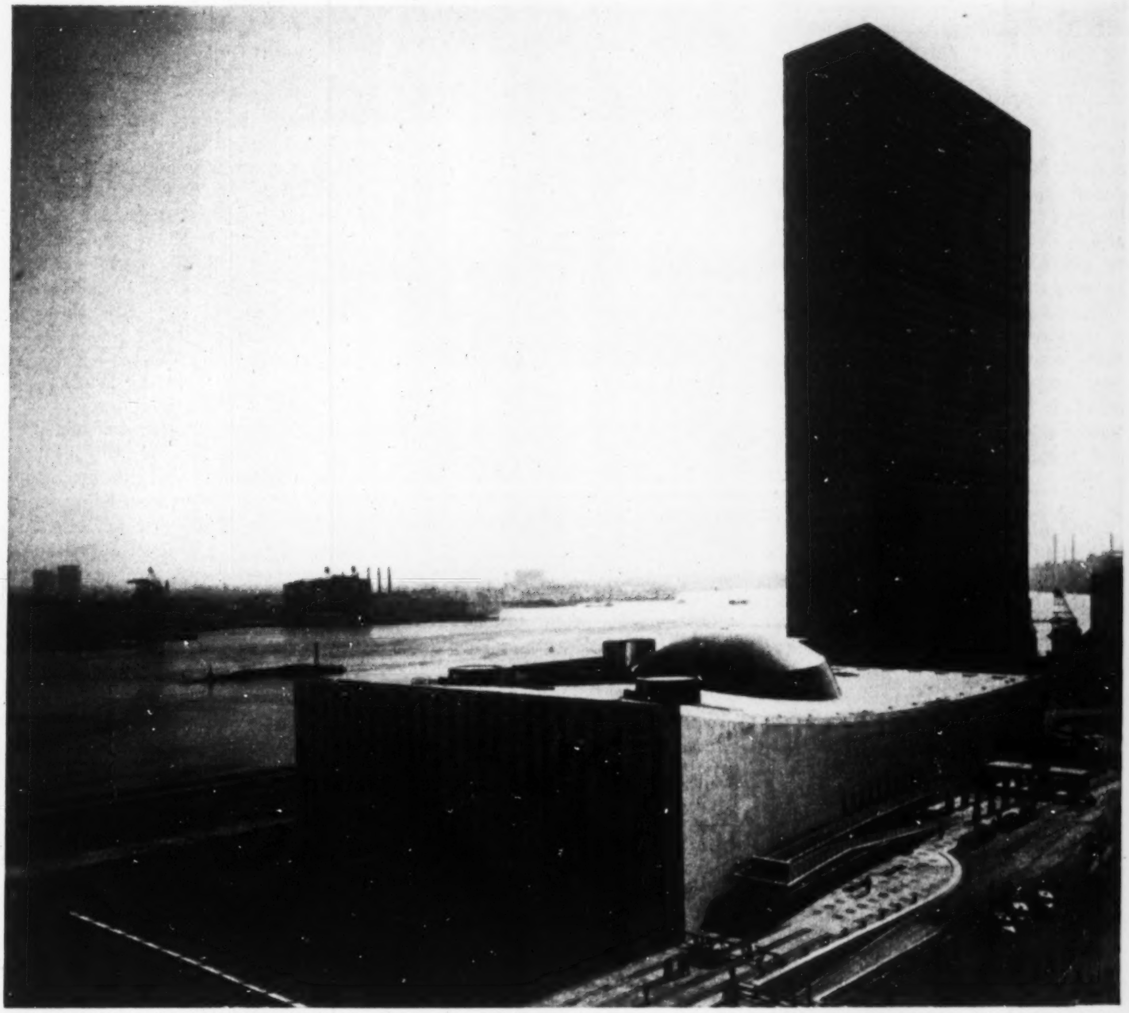


GENERAL ASSEMBLY BUILDING (center) completes the headquarters group of the United Nations in New York City. Other building is the Secretariat (right). The Conference Building, between the two, faces the East River.

Techniques and trends . . .

Buildings and housing

In view of the need for defense buildings, last year's huge building construction volume should have been expected. However, when government restrictions and possibilities of material shortages were taken into account, there was plenty of room for doubt, early in 1952, as to whether the industry could avoid strangulation by government red tape. If the 54-day midsummer steel strike could have been foreseen, the outlook would have been even more pessimistic.

But building designers devised ways of beating the shortages, and contractors managed to squirm through the red tape. Together, they kept building volume at a near-record level. And in the process, they gave some new building materials and construction methods a boost.

• Public building sets record—At least one new construction record was established last year: The volume of non-residential public building hit a new high. Contracts totaling $4.3 billion were awarded.

It is noteworthy that more than half of this money went for atomic-energy facilities. Since expenditures for fissionable-material plant may drop 60 to 70% this year, it does not appear likely that public building in 1953 will be anywhere near a new record. But there are signs that it will top the 1951 figure of $2.5 billion.

As for public housing—it limped along under congressional disfavor, with only 60,000 units started, compared with 71,200 in 1951. Expectations are that the newly elected Congress will not encourage a larger number of starts in 1953.

In the defense housing program, 98,000 units have been scheduled to date in 204 areas that have been designated as federally affected or defense emergency areas. By the end of 1952, about 25,000 units had been built and 17,000 still were under construction.

• Second best year for private building—Private home builders did much better than public housers. They started construction on 1,065,000 units (bringing total housing starts for the year to 1,125,000), and had their second-best year. Their 1952 production was topped only by the 1,396,000 units they started in 1950. This marked the fourth straight year that residential-construction volume exceeded one million units and brought the total for the last six years to seven million. With demand for new housing still high, signs point to another one-million-unit year in 1953.

Private industrial building also had its second-best year. Swelled by defense construction, contracts awarded came to $2.7 billion. Though this total falls far short of the $4.1 billion chalked up in 1951, nevertheless it is 50% better than the amount awarded in 1950.

• Standardized structures—Specialists in standardized industrial construction did relatively better than the rest of the industry. They set a new production record in 1952, according to the president of one of the larger prefabricating concerns (but he produced no figures to prove it). He said also that his company had delivered more standarized steel-frame buildings last year than in any previous year and that sales in 1953 would be larger than ever.

The big selling points last year were the availability of prefabricated steel buildings when structural steel was in short supply, and the speed with which the standardized buildings could be erected. But the prefabricators really got their foot in the door when the purchasers learned that these structures are economical in first cost, permanent and sturdy and could be made attractive in appearance. In contrast, prefabricated housing showed no signs of growth last year, but shuffled along at a rate of about 50,000 units per year, as in two previous years.

Non-residential commercial building started 1952 in the doldrums. Government restrictions were effective in holding volume down. But with easing of controls, commercial building came back to life last May. In the cities, big office buildings were started; in the suburbs, huge shopping centers. By year's end, contracts awarded hit $800 million, topping the 1951 total and falling barely short of the near-billion 1950 total. With further relaxation of controls, commercial building in 1953 is expected to be at least 25% better than in 1952.

• New types of buildings—To maintain this high level of construction, the building industry was compelled to exercise great ingenuity to keep costs down, to find suitable substitutes for scarce materials and to speed construction. At the same time, it was under pressure to design and erect new types of buildings.

For example, General Motors wanted a building for producing both peacetime and wartime goods simultaneously. The solution was a plant that may set the pattern for future guns-and-butter factories (ENR June 26, 1952, p. 53). Over 60% of the total productive floor space is designed as a dual-function area that can be converted back and forth between aircraft and automobile assembly in a few days. The other 40% of the floor space is divided into areas permanently assigned to car and plane production.

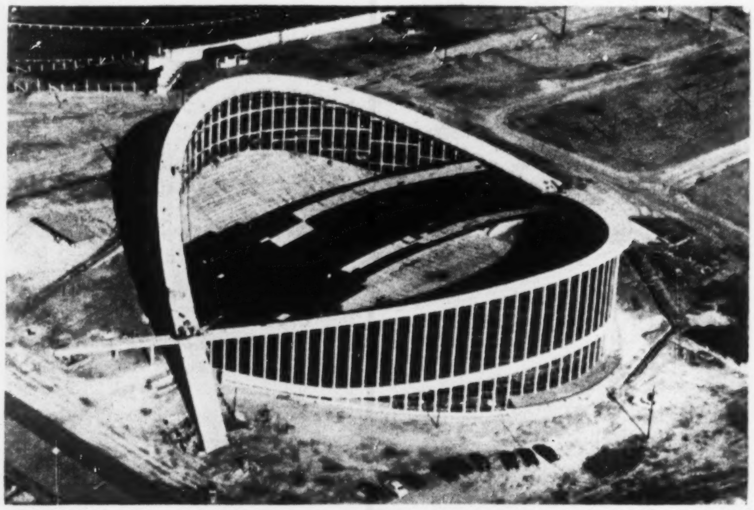
ALUMINUM BUILDING, headquarters in Pittsburgh, Pa., for the Aluminum Company of America has gained fame as the lightest office building for its size.

Encouragement was given to another new building type when the Federal Communications Commission last year authorized new television stations. Both existing companies and would-be broadcasters started a construction boom of their own. But the stations they wanted were entirely different from existing broadcasting studios. They might best be described as a combination theater, motion-picture set and radio studio (ENR May 29, 1952, p. 54; Nov. 20, 1952, p. 34; and Dec. 11, 1952, p. 21).

Also, last year, there was considerable growth in facilities for studying nuclear behavior, such as cyclotrons and betatrons, and for utilizing radioactive material in research, medical treatment and industrial applications. The first reactor not owned by the government was brought close to completion at North Carolina State College in Raleigh. Work started on facilities in which the first atomic powered submarine will be built—a huge metal sphere supported on a concrete saucer. And several companies opened negotiations with the AEC for construction of privately owned nuclear power plants.

The atom program also put pressure on the building industry to design and build new types of structures. This, of course, really started with the explosion of the first fission bomb, but now with the rumored success of a vastly more powerful fusion (so-called hydrogen) bomb, the necessity of designing buildings with greater resist-

(Continued on page 91)



LIVESTOCK JUDGING PAVILION at the state fair grounds in Raleigh, N. C., is 300 ft in diameter. Its metal-deck roof, shown being installed, is supported on steel cables strung between two opposing reinforced concrete arches in oblique planes.

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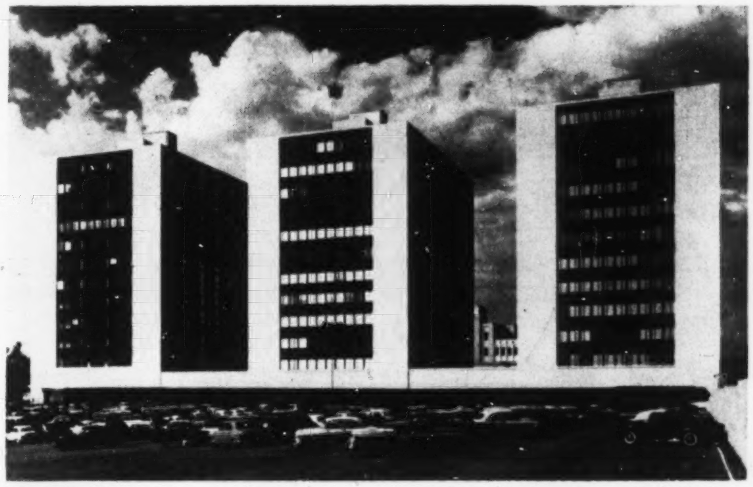

OFFICE BUILDING in Los Angeles consists of three 12-story units, 100x150 ft in plan, providing 460,000 sq ft of floor area, shops and 1,400-car parking area.

ance to dynamic lateral loads takes on added meaning. Last year, 400 engineers participated in each of two conferences on opposite coasts of the U.S. to re-appraise building design in the light of present knowledge of atomic forces (ENR July 10, 1952, p. 30). Unfortunately, at both conferences, it was evident that the government was withholding essential information for security reasons. Engineers attending found that there was no way of estimating the forces to be resisted or the rate at which they build up. Until the AEC declassifies the badly needed data, the best that can be done to save lives and property is to disperse buildings to minimize damage from any one bomb and to design against lateral forces as for hurricanes and earthquakes.

• Trends in building—For some time now, the Defense Department has been making an effort to cut construction costs by standardizing its structures.

Last year, the trend spread to large Air Force hangars. For example, three basic sizes of maintenance hangars will be built (ENR July 31, 1952, p. 42): A heavy-bomber hangar, will be 600x250 ft; a medium-bomber hangar, 350x250 ft; and a fighter hangar, 250x250 ft. In addition, two other sizes are specified to permit future expansion of the smallest basic unit to accommodate the larger planes.

All these buildings have structural steel frames, with roof trusses cantilevering 104 ft from supporting towers in the center to the outer doors. This type of construction not only provides large areas unobstructed by structural members but also makes possible unobstructed entrances for the full building length.

Another step taken by the Defense Department to cut costs showed up in the construction of Army hospitals. New buildings are designed principally to meet current needs, but provision is incorporated for easy expansion. In some cases, bed capacity can be doubled during emergencies without addition of clinical and administrative facilities (ENR Aug. 14, 1952, p. 124). Two basic sizes will be built: 500-bed, expandable to 1,000, and 250-bed, expandable to 500. Designs for seven such hospitals were developed last year, and the first bids for construction are expected early this year.

• New ideas for machine foundations—The defense program is also affecting foundation design: To cut the costs of manufacturing aircraft, the Air Force has ordered forging presses of up to 50,000-ton capacity, compared with former record capacities in the U.S. of about 18,000 tons. Designing the foundations for these forges calls for considerable ingenuity. One plan proposed (which will work for even larger presses) is to suspend the press from a prestressed concrete roof. Building columns would transmit the pressure from the roof to concrete foundations. There would be more footings than would be needed for a press supported directly on the ground, but each footing would be relatively small.

Another example is the foundation adopted for an 8-ton hammer in the Huntington, W. Va., plant of International Nickel Co. It may set a trend for substructures required to take heavy shocks without fatigue failure and without transmitting vibrations to the surrounding area (ENR Dec. 11, 1952, p. 46). This concrete foundation consists of two massive concrete blocks, one above the other, resting on springs and dampers in a concrete-lined pit. The top block, to which the guide frame of the hammer is bolted, sits on a rubber cushion. The anvil also rides on rubber springs but is set in an opening in the top block and has no contact with it. The rubber springs are supported on the lower block, which is mounted on steel coil springs at the bottom of the pit. Both concrete blocks were prestressed to prevent fatigue failures.

At U.S. Steel's Fairless Works, the need for speed in construction led to the development of a foundation design that eliminated bottlenecks caused by unavailability of machine designs when foundation and superstructure work had to proceed. The company's engineers called for early

(*Continued on page 94*)

HUGE FACTORY for earthmoving equipment built by Caterpillar Tractor Co. at Joliet, Ill., was hardly finished when work started on two large additions.

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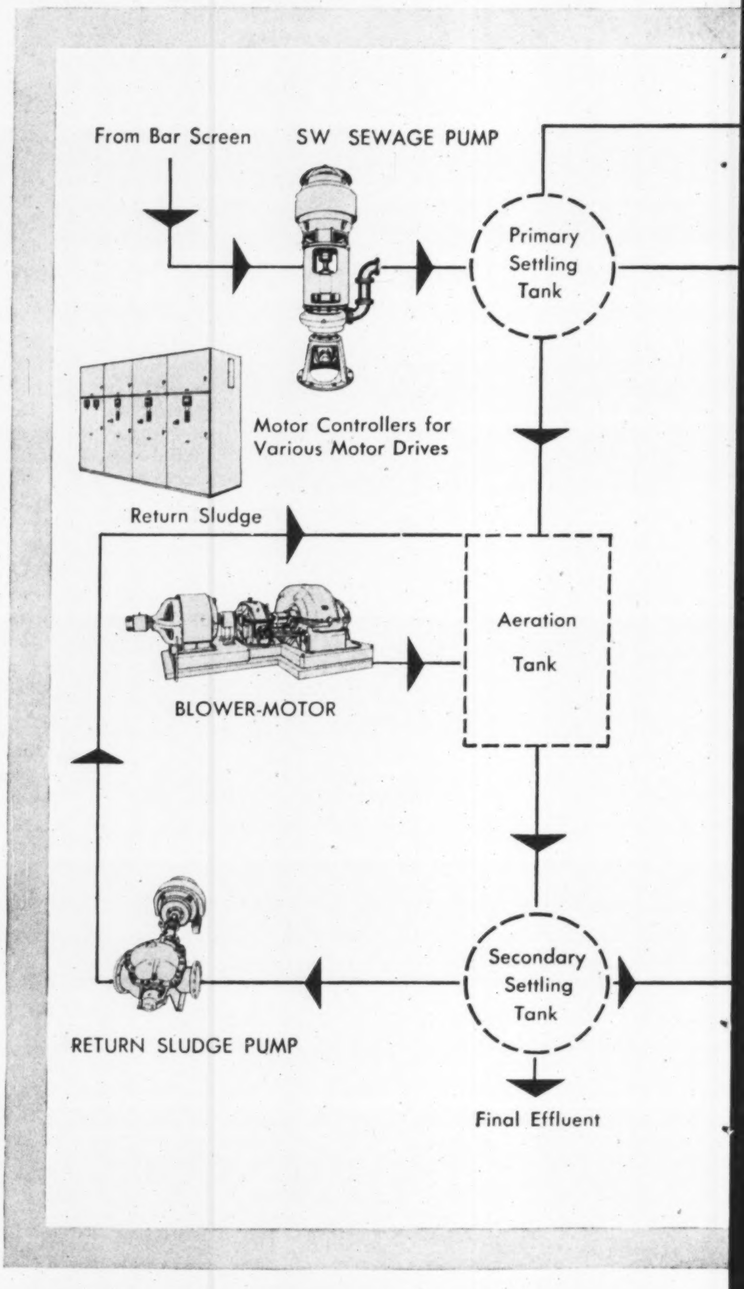
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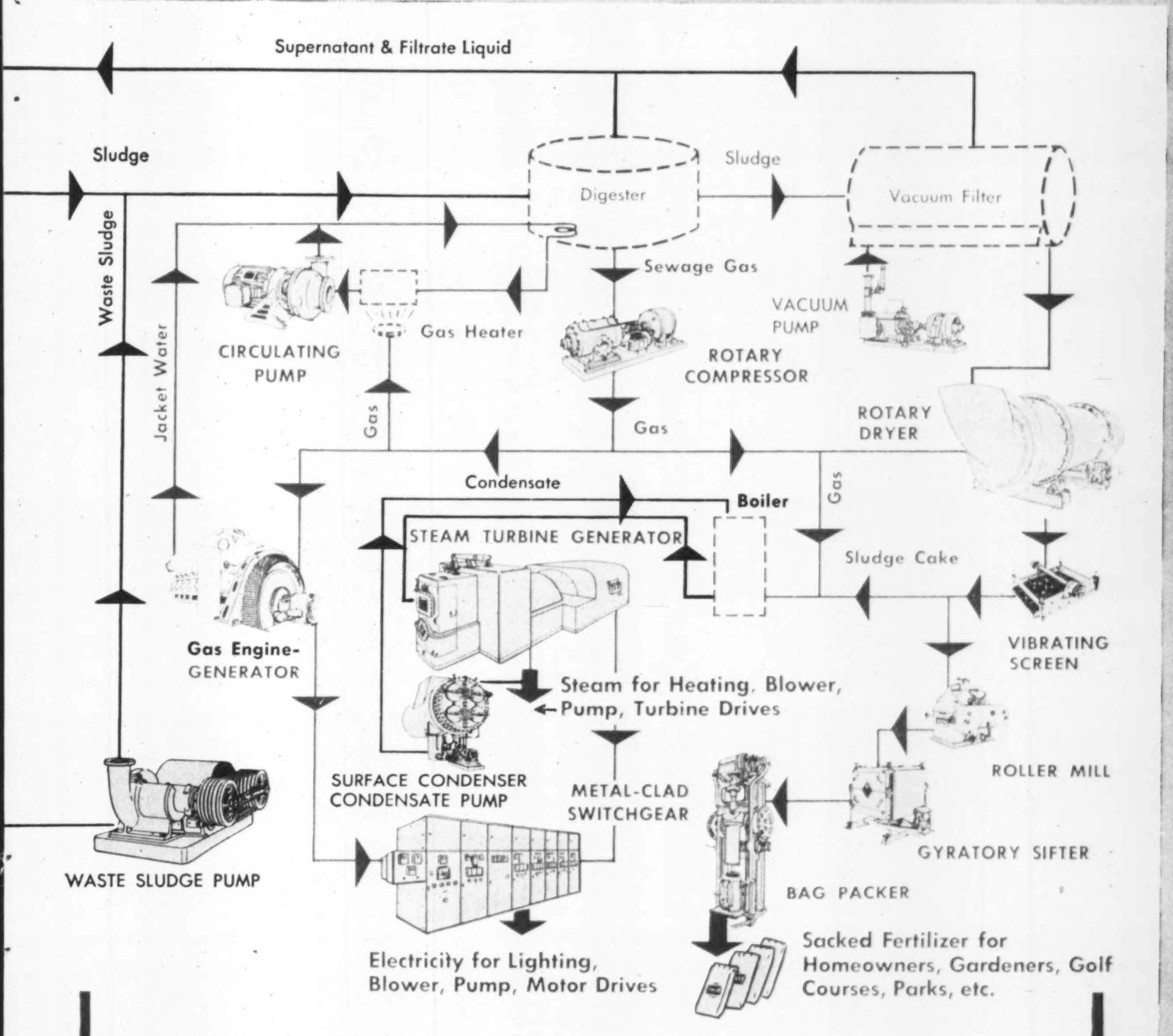
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ACTIVATED SLUDGE FLOWSHEET DIAGRAM

Byproduct Utilization Processes Shown in Color

construction for each piece of equipment of a waterproof, open-topped box, which they called a tub foundation (ENR Aug. 28, 1952, p. 32). Later, when equipment design was ready, a machine foundation was built inside each tub. The tubs were built quickly so column foundations within and adjacent to them were ready in the shortest possible time. Dewatering was discontinued early and floors were completed without delay.

• **Toward faster erection**—Several other techniques for speeding construction came to the fore last year. One was a technique for speeding erection of welded buildings. In putting up a one-story steel-frame office building in Tulsa, Okla., the contractor tack-welded beams to the columns or girders as soon as they were hoisted into place, eliminating the need for temporary bolts (ENR March 27, 1952, p. 66). A second technique was an adaptation of tilt-up wall construction. On housing projects in Buffalo, N. Y., a contractor built wood-frame exterior walls two stories high on the ground floor and tilted them into place (ENR Nov. 27, 1952, p. 30).

Also, greater use was made of the Youtz-Slick lift-slab method of construction, and a record for weight of lift was set. A reinforced concrete roof slab with an area of 7,000 sq ft, weighing 500 tons, was jacked into place from the ground-floor slab on which it had been cast (ENR Nov. 20, 1952, p. 44).

Probably the most significant development in lift-slab construction in 1952 was the prestressing of one of the lift-slabs (ENR April 10, 1952, p. 77). Prestress was applied in two directions to the roof of a laboratory building at the Southwest Research Institute, San Antonio, Tex., where the lift-slab method was developed. This experience indicated that prestressing is structurally and economically feasible for use with the method. It enabled the average steel reinforcement to be reduced from about 4 lb per sq ft to 1.6.

Prestressed concrete, which has been gaining considerably in bridge construction, also made other gains in the building field. Prestressing jobs now are spread all over the country. The outstanding one last year from the viewpoint of size, spans and load carried was a San Francisco parking garage with prestressed girders spanning up to 62 ft and a two-span continuous girder 50 ft long.

Some major building and housing projects

• **Aluminum Company of America**—The 30-story headquarters building in Pittsburgh, Pa., with exterior facing of one-story high aluminum panels, is virtually completed. The first half of the Wenatchee, Wash., plant is now in production, while the remainder of the facilities there are nearing completion. Production also has been started at the Rockdale, Texas, smelting works, where lignite eventually will be used for fuel to generate electricity. These two plants will produce 85,000 tons of aluminum annually when finished. Processing has started on bauxite in the new plant at Bauxite, Ark., which has a 400,000-ton annual capacity. A similar plant at Mobile, Ala., was expanded to increase its capacity 220,000 tons per year, to a total of 875,000 tons annually. And a new rolling mill near Davenport, Iowa, will be placed in production this year.

• **Atomic Energy Commission**—About $1.3 billion was spent last year for construction, and the same amount is expected to be spent this year. The money went for expansion of gaseous diffusion facilities at Paducah, Ky., and Oak Ridge, Tenn., and for the new Savannah River plant, on all of which work will continue throughout this year. At Savannah River, plans call for 259 buildings. Work is now starting on the new Portsmouth, Ohio, plant.

• **Beaunit Mills**—Built in two units, with a total floor area of 700,000 sq ft, this plant at Coosa Pines, Ala., started operations in 1952. Unit No. 1 has an annual capacity of 10,000,000 lb of viscose-rayon textile per year, Unit No. 2 of 36,000,000 lb of viscose rayon tire cord.

• **Bowaters Southern Paper Corp.**—Work has started on a $50-million newsprint mill at Bowaters, Tenn., with a capacity of 470 tons per 24 hr, plus 156 tons of semi-bleached sulfate pulp in bales, with integrated pulp-making facilities to support this output.

• **Caterpillar Tractor Co.**—Production of scrapers and other earthmoving equipment started last March in this Joliet, Ill., plant, which has 700,000 sq ft of floor area. However, two additions already are under way—one with 280,000 sq ft of manufacturing area and another with 230,000 sq ft for parts storage.

• **Chemstrand Corp.**—Plant at Decatur, Ala., with an annual capacity of 30,000,000 lb of Acrilan, a synthetic fiber, started production last year. Facilities consist of 14 buildings ranging in size up to 400x500 ft for the main manufacturing building. A nylon filament plant at Pensacola, Fla., with a 50,000,000-lb annual capacity, will be finished this year.

GLASS TOWER on a broad two-story high base forms the headquarters office building for Lever Brothers Co. in New York City. Exterior trim is stainless steel.

• **Columbia Broadcasting System**—The first unit of a $35-million Television City in Los Angeles was completed last year. Costing $12 million, it consists of four 12,000-sq ft studios, rehearsal halls, service and craft facilities, and offices.

• **Consolidated Vultee**—Guided missile plant at Pomona, Calif., with 1,400,000 sq ft of floor area, has a structural steel frame and precast concrete walls. It is scheduled for completion in March, but most sections are now in use.

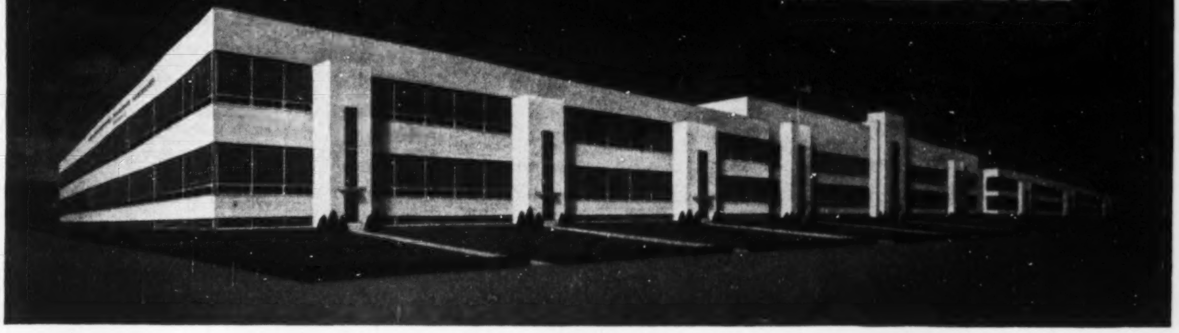
• **Detroit Civic Center**—With work still under way on a 15-story city office building and a 20-story county court building, demolition of existing buildings and construction of foundations will be started next month on the 2,900-seat Henry and Edsel Ford Auditorium—third unit in the center. A site has been acquired for a fourth unit, a convention hall and exhibits building.

• **Electro Metallurgical Co.**—This division of Union Carbide and Carbon Corp. is building a huge ferro-alloy plant and steam power station on the Ohio River at Marietta, Ohio. More than 1,000,000 sq ft of prefabricated wall panels, made up of an insulation core sandwiched between two thin layers of precast concrete, are being used to enclose 15 major buildings. The project will be finished in 1954.

• **Ford Motor Co.**—B-47 Boeing strato-jet bomber wings will be manufactured in the Kansas City plant completed at year's

(*Continued on page* 98)

DRIVE-IT
FASTENS WOOD TRIM TO STEEL WINDOWS AT IBM



Wood trim was fastened to the steel window frames with Drive-It at the new IBM plant at Poughkeepsie, New York. Over 20,000 drive pins were used by Stewart-Scott Construction Corp. Drive-It offered the quickest, easiest, most economical method. No drilling, tapping or power lines.

split-second fastening to **concrete steel**

Drive-It uses a small powder load to drive hardened steel pins into concrete or steel. No power lines! No drilling!

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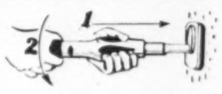
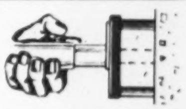
DRIVE-IT, the *first* powder actuated tool approved by Underwriters' Laboratory.

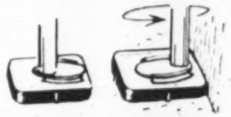


DRIVE-IT cannot be discharged accidentally due to the push and turn sequence. This, plus the large safety pad makes *DRIVE-IT* triple safe.



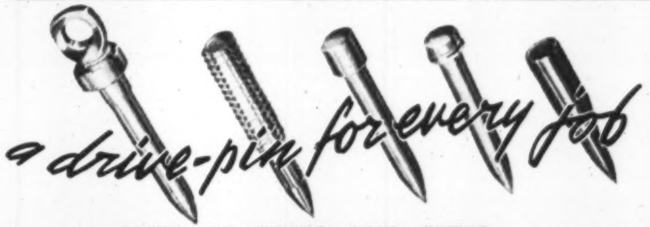
Exclusive Automatic Barrel Extension for fastenings inside junction boxes or other recesses.

DRIVE-IT is the only powder-actuated tool which requires but one standard power load regardless of penetration desired.



Exclusive Swivel Safety Pad easily rotated for getting into close quarter work.

DRIVE-IT "300", lowest cost fastening tool. Low original cost and low operating cost.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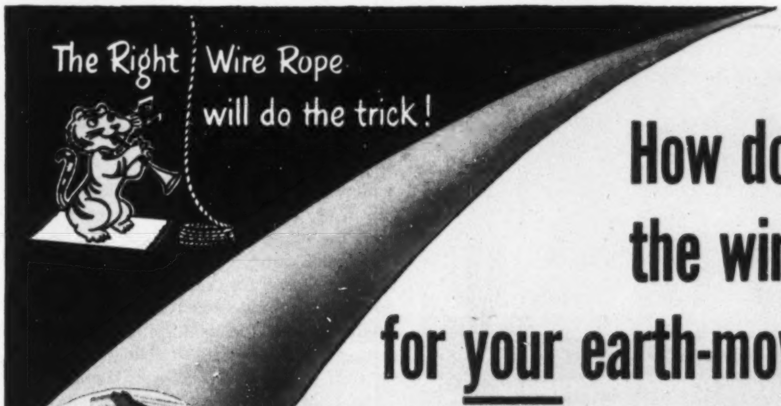
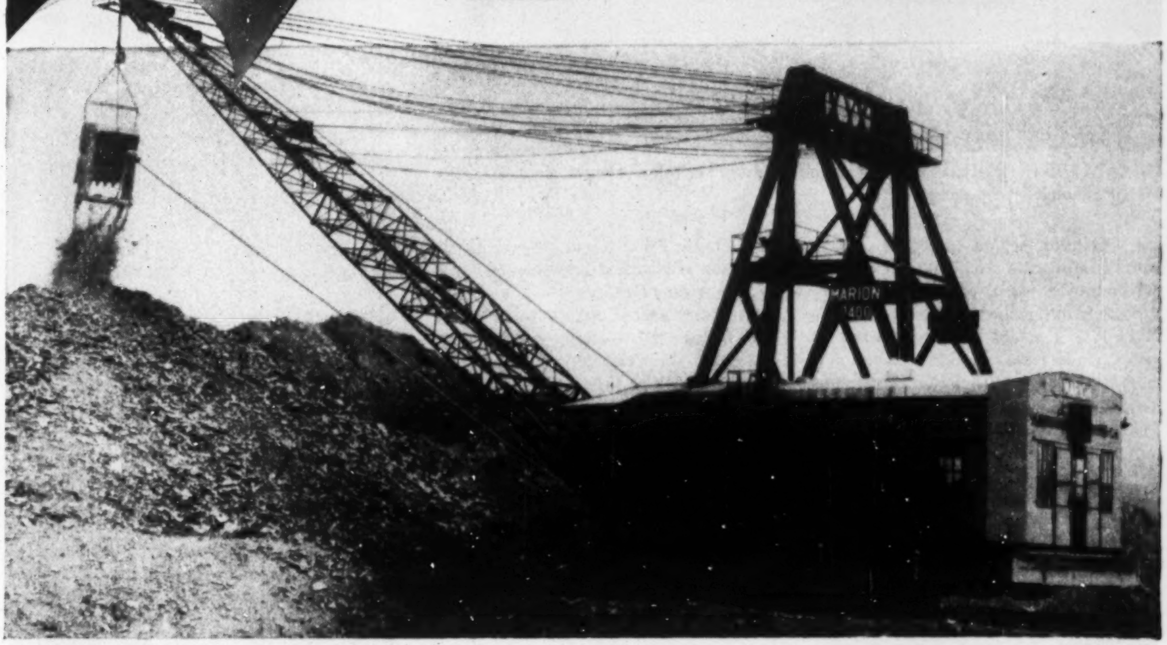

The Right Wire Rope will do the trick!

How do you choose the wire rope for *your* earth-moving equipment?



EVERY wire rope on your stripping or excavating machinery needs a particular combination of strength, fatigue resistance, and flexibility. Hoist ropes on big power shovels need high tensile strength to absorb impact stresses and must be extremely tough to withstand constant bending over sheaves. On draglines, drag ropes must possess high strength combined with great abrasion resistance. Boom ropes must have strength plus fatigue resistance.

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UNITED STATES STEEL

METALLURGY BUILDING at General Motors Technical Center, Detroit, Mich., has an enameled steel exterior.

end. Facilities include 1,003,000 sq ft of manufacturing area, 160,000 sq ft of office and employee space, powerhouse, sewage disposal plant, incinerator building, paint building, garage and receiving docks. Exterior walls are insulated aluminum panels. A new automotive plant also completed last year just outside Cleveland, Ohio, includes a 1,300,000-sq ft foundry and 1,100,000 sq ft of floor area for engine assembly. Its ventilation system circulates air at 2,800,000 cfm.

• **Forrestal Village**—This 1,000-unit rental housing project at Great Lakes Naval Station, Chicago, was finished at the end of 1952. Exterior walls consist of story-high panels made up of 1½ in. of cellular-glass insulation sandwiched between a 4-in. and a 2½-in. layer of precast concrete. Floors and roof are hollow precast-concrete units. The hollows are used as heating ducts. There are 102 one-story and 201 two-story buildings in the project.

• **General Electric Co.**—To produce jet-engine parts, the first building of what is to be known as Appliance Park, on a 700-acre tract at Buechel, Ky., was completed last year. Ultimately, the project will be the manufacturing, engineering, marketing and administrative head-quarters for major appliance operations, employing 16,000 people. Present plans call for five manufacturing buildings, each about 600x900 ft. A second building now is under construction, and work is starting on a third.

• **General Motors**—An automobile assembly plant, with 1,244,000 sq ft of floor area, in Arlington, Tex., will begin operations next fall. A dual-purpose plant, it can be operated for combined defense and commercial production; for total defense production; or for total civilian production. The Metallurgy Building, first to be built at the GM Technical Center in Detroit, Mich., was completed last June. Air-conditioned with a high-velocity system, the laboratories and offices in this 320x110-ft structure are arranged along both sides of a 36-ft high foundry bay, which is ventilated through the roof. Exterior walls consist mostly of porcelain-enameled steel panels.

• **Henry Ford Hospital**—Construction is only about 15% completed on the 19-story hospital and clinic in Detroit, which will cost about $17 million.

• **Henry J. Kaiser Co.**—Kaiser Aluminum & Chemical Corp.'s $150 million aluminum reduction plant at Chalmette, La., reached the 50% completion mark last year when operations started on the fourth potline. This plant, with an annual capacity of 400,000,000 lb of aluminum, will be the largest in the U. S. The eighth potline was completed at Mead, Wash. The alumina plant at Baton Rouge, La., is being expanded at a cost of $65 million to handle 800,000 tons per year. Kaiser Steel Corp. placed in operation last summer a $25-million tinplate mill at Fontana. Also included in the Fontana expansion were a third blast furnace and the nine open-hearth. These will raise the capacity of the steel mill to 1,536,000 ingot tons.

• **Int'l Minerals & Chemical Corp.**—The $12,000,000-phosphate production and storage facilities at Bonnie, Fla., form the first large plant to be constructed on sand compacted by Vibroflotation. This method involves the use of a vibrating spud and a water jet to develop enough bearing strength in the soil to support the buildings on spread footing.

• **Ivy Hill Park**—Concrete frames for the five 14-story apartment buildings in this $17-million Newark, N. J., development were finished last fall. The project, which will provide accommodations for 2,095 families, is about 50% completed.

• **Kraft Food Co.**—Structural frame for a one-story plant at Atlanta, Ga., providing 269,000 sq ft of floor area, consists of hollow rigid frames of precast concrete.

(*Continued on page 101*)

HOTEL STATLER

HOTEL-OFFICE BUILDING in Los Angeles contains 1,275 hotel rooms and a 14-story office wing.

made to outlast

any school...
cut maintenance too!

In times like these it's just good business to take a second long look when selecting windows for your school buildings. Cost, of course, is a factor, but the WAY cost is figured is the important thing. How long will the windows last? What about maintenance?

Those two questions are keys to better buying and here Ceco-Sterling Aluminum Double-Hung Windows win on both counts. Made of ageless aluminum, they give rugged life-time service . . . will outlast any school . . . won't rust, rot, warp, or swell . . . provide the tightest weather seal ever.

When it comes to maintenance Ceco-Sterling Aluminum Windows deliver a plus value. No painting is necessary and cleaning is a mere matter of wiping.

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Here is Ceco-Sterling **Double-Hung** Aluminum Window, series 200-B

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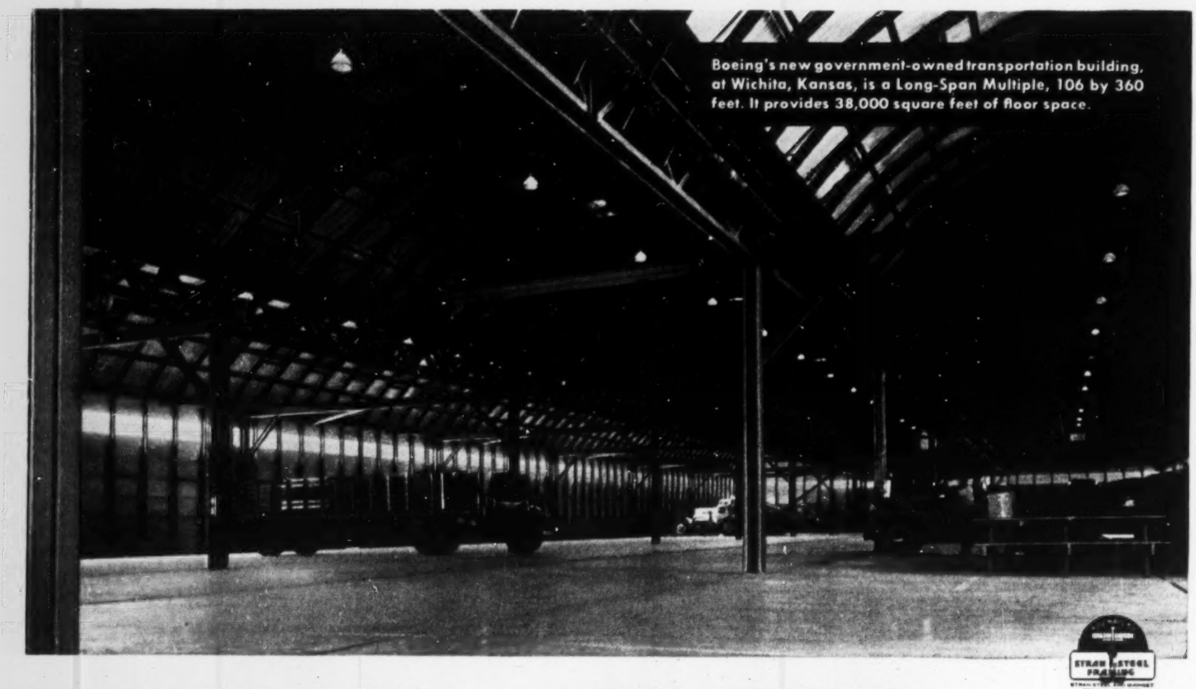


Boeing's new government-owned transportation building, at Wichita, Kansas, is a Long-Span Multiple, 106 by 360 feet. It provides 38,000 square feet of floor space.

TO EXPAND QUICKLY, BOEING SPECIFIES

LONG-SPAN MULTIPLE BUILDINGS

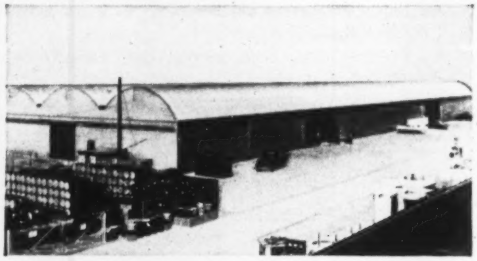
FOR ECONOMICAL QUALITY CONSTRUCTION

When stepped-up production at Boeing created an immediate need for additional space, it was logical for this leading aircraft manufacturer to look to all-steel, non-combustible Long-Span Multiple buildings.

The large, clear-span bays are ideal for manufacturing and storage . . . economically insulated, ventilated, and skylighted . . . easily expanded.

Long-Span Multiples provide up to 18-foot interior clearance under struts. Sliding, overhead or other types of doors may be installed. Bays are 40 x 35½ feet, providing ample room for modern industrial equipment, palletization, and production lines. Dome height of arched roof runs up to 28 feet. Ribs and trusses are of low alloy N-A-X HIGH-TENSILE steel for strength, durability and economy.

Manufacturers in a hurry can count on prompt delivery of Long-Span Multiples. All parts are factory fabricated, pre-punched for connections, packaged and shipped ready for erection. Write for complete information.



▲ Exterior view of Boeing's transportation building at Wichita. It is used to house rolling stock necessary for mass production of the B-47 Stratojet bomber.

▲ Another Long-Span Multiple is used by Boeing for warehouse purposes. Measuring 497 by 323 feet, it is ideal for storage of B-47 Stratojet parts and assemblies.

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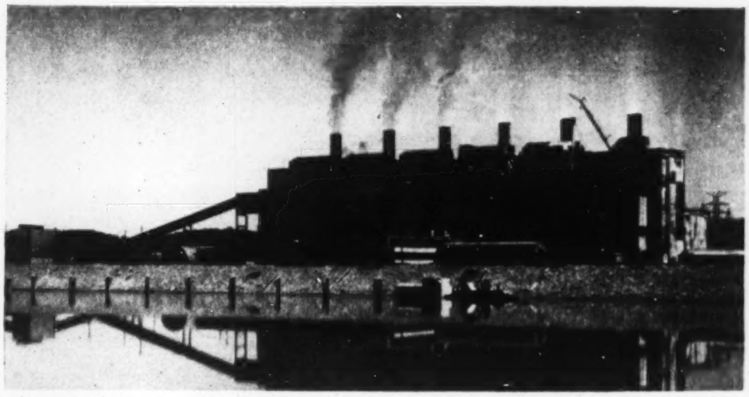
BANJO-SHAPED SCHOOL—Circular structure, 234 ft in diameter, part of General Wingate High School in Brooklyn, N. Y., encloses ground-floor cafeteria and an auditorium. Around the perimeter of the building, surrounding the auditorium, are classrooms. Kelly & Gruzen photo.



JOHNSONVILLE STEAM PLANT, built by Tennessee Valley Authority on Kentucky Lake, Tenn., will have its six 125,000-kw units in operation this month.

It is enclosed with 3,246 prefabricated, story-high wall units, 21x22 ft by 6 in. thick. Each panel consists of 2 in. of cellular-glass insulation sandwiched between two 2-in. thick layers of precast concrete.

• **Lakewood Park**—With the addition of 4,200 more homes in 1952, the number of units completed in this Los Angeles housing development now totals 12,000. Construction of 5,000 more in 1953 will bring the project, which was started in 1950, to the planned total of 17,000.

• **Lever House**—The 24-story air-conditioned headquarters building for Lever Brothers Co. in New York City was finished last year. Appearing to stand on stilts, it consists of a broad, two-story base, with glass-enclosed ground floor lobby, supporting a 22-story glass tower. Half-story high, non-opening windows are continuous around the building. Spandrels are faced with glass, and stainless steel trim interlaces the exterior.

• **Levittown, Pa.** — Construction started last spring on this new city, and by the end of the year 3,050 one-story wood-frame houses were completed. This year about 6,000 houses will be built. The project, located near the Fairless Works of U. S. Steel, will consist of 16,000 houses in two more years, according to present plans. All but 1,500 will be 3-bedroom dwellings selling for $10,500. The others will be luxury 3-bedroom houses, each with expansion attic and two baths, selling for $18,000.

• **Melrose Building**—This 21-story office building in Houston, Tex., is air conditioned. To keep cooling costs down, the structure has horizontal concrete canopies above all the windows on its south and east faces, to keep the sun out.

• **Mt. Sinai Hospital**—The 150-bed 9-story maternity pavilion of welded steel construction and 4-story Berg Laboratory in New York City have been finished. The 10-story Atran Laboratory, new service and delivery center, kitchen, cafeteria, control and central locker areas, electrocardiograph department, and X-ray department expansion are rapidly nearing completion.

• **New York City Board of Education**—Last year, 52 new schools were under construction and 10 large modernizations. These projects bring construction contracts awarded in the last two years to $100 million.

• **New York Housing Authority** — Completed in 1952: Bland, Farragut, Marble Hill, Pomonok and Breukelen Houses—five projects containing 7,138 apartments —at a cost of $80 million. Still under way: Foster, St. Nicholas, Redfern, Edenwald, Throgg's Neck, Bronxdale, Cooper Park, Governor Smith, Melrose, Baruch, Van Dyke, Washington, Gravesend, Mariner's Harbor, Highbridge, Sound View, Brevoort and South Jamaica Houses—18 projects containing 21,750 apartments—at a cost of $289 million.

• **Pacific Gas & Electric Co.**—Two units were added to the Moss Landing steam plant last year to bring the capacity to 575,000 kw, and two units are being added to the Contra Costa plant to bring it to the same capacity. Construction is also under way on the 600,000-kw Pittsburg steam plant. Each of the three plants cost $80 million.

• **Prudential Insurance Co.**—Construction of foundations started last fall in Chicago for a 41-story office building, to provide 1,000,000 sq ft of rental floor area. A contract for steel fabrication and erection was awarded last month. Fully air conditioned, the building will contain parking space for several hundred cars.

• **Statler Hotel** — This combined office building and hotel in downtown Los Angeles opened in stages during the last half of 1952. Costing about $25 million, the structure contains 1,275 hotel rooms and a 14-story office wing.

• **Stonestown**—About 75% of the construction has been completed for the $15-million shopping center that will serve San Francisco's new Stonestown apartment development. A $3.5-million department store for Emporium was finished last year, as well as several small stores and medical building. Another department store is still under construction.

• **Tennessee Valley Authority** — Seven major steam plants, some among the largest in the world, are under construction. Johnsonville plant, on Kentucky Lake, Tenn., now has five of its six 125,000-kw units in operation; the sixth is scheduled to go on the line this month. Widows Creek, on Guntersville Lake, Ala., with the same number and size of units,

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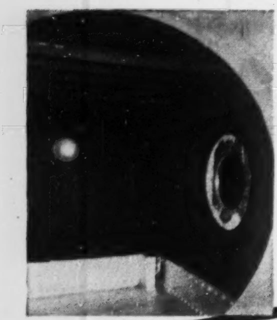

Looking into well-kept water basin through fan port. Glass port at right and interior lighting permit engineering students to observe break-up and distribution of cooling water.

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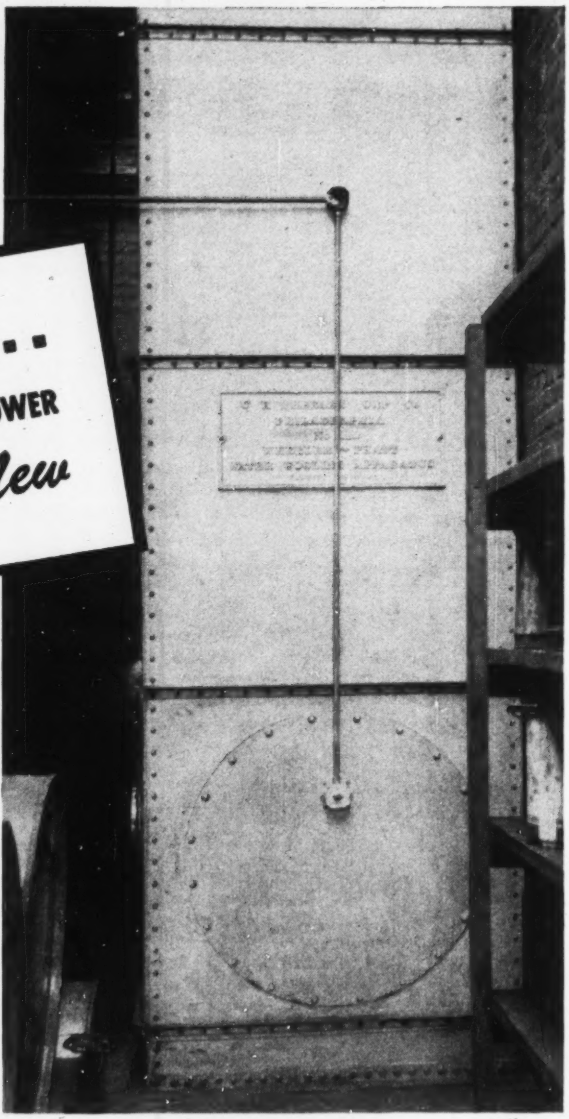
THIS C. H. WHEELER COOLING TOWER

Still Works Like New



First C. H. Wheeler forced draft tower built in 1906. 4'3"x6'x53'9" high. Metal casing.

At the Towne Scientific School of the historic University of Pennsylvania in Philadelphia a C. H. Wheeler Water Cooling Tower has been in service since 1906. It was the first mechanical draft cooling tower built by the C. H. Wheeler Mfg. Co. and some believe it is the first one built in this country.

In all these years the wood fill has never required replacement. It's still distributing and breaking up cooling water as efficiently as the day it was first put in service. The inside metal casing has never required repairing above the water basin area. Another smaller C. H. Wheeler Cooling Tower has also served this engineering school for several decades. Both are forced draft towers.

These are but two of many C. H. Wheeler towers that have stood for twenty years and more, as testimony to the quality of workmanship and materials that go into every tower we build. Of course, length of service depends on proper care. C. H. Wheeler engineers have prepared a *"Blue print for Operating and Maintaining Mechanical Draft Cooling Towers."* A request on your company letterhead will bring your copy promptly by mail.

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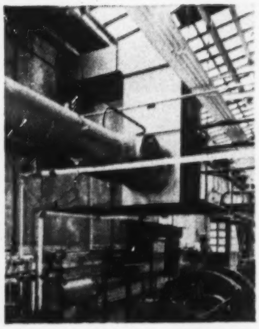


Another, smaller C. H. Wheeler water cooling tower suspended from beams in another section of the Towne Scientific School.

114

C. H. WHEELER *of Philadelphia*

COOLING TOWER DIVISION, 407 S. DEARBORN STREET, CHICAGO 5, ILL.

Steam Condensers • Centrifugal, Axial and Mixed Flow Pumps • Steam Jet Ejectors • Cooling Towers • Vacuum Refrigeration
High Vacuum Process Equipment • Micro Particle Reduction Mills • Marine Condensers and Ejectors • Deck Machinery

has three units in. Completion is expected next year. Shawnee, on the Ohio River, will have the first of its ten 150,000-kw units in operation this year, the last in 1955. Also, the first unit in the Kingston plant, on Watts Bar Lake, Tenn., should go on the line in 1952. Plans call for an ultimate 9-unit installation with a capacity of 1,600,000 kw. Colbert, on Pickwick Lake, Ala., which will have an 800,000-kw capacity, is expected to start operation of its first 200,000-kw unit toward the end of next year and to be completed in 1955. The John Sevier plant, with two 200,000-kw units, on the Holston River, Tenn., and the Gallatin, on the Cumberland River, with two 250,000-kw units, largest ever manufactured, were recently placed under construction with completion expected to be some time in late 1955.

• **Two Fifth Ave.**—Tallest flat-slab reinforced concrete structure in the East, this apartment building in New York City has a 19-story wing. A second wing was limited to only five stories, where it fronted on Washington Square, to conform in height and appearance with existing buildings.

• **United Aircraft Corp.**—This company last year added 1,900,000 sq ft of manufacturing area to its Connecticut plants. Largest of the new facilities is Hamilton Standard Division's new home at Windsor Locks, with 800,000 sq ft. Second largest is Pratt & Whitney Aircraft's branch factory at New Haven, with 500,000 sq ft.

• **United Nations**—At the headquarters site in New York City, the General Assembly Building and the Conference Building were finished in 1952. The General Assembly Building, 160x380 ft in plan, is a low structure with curved walls and roof. Near the center of the roof is a dome 98 ft in diameter. This building contains a large conference room and the General Assembly room. The Conference Building (formerly called Meeting Halls) is a 4-story rectangular structure, 200x500 ft in plan, incorporating the equivalent of six full-size theaters—three large conference rooms, and Security Council, Trusteeship, and Economic and Social Welfare Chambers. Also on the site is the 39-story Secretariat and a library. No more buildings are planned at present. The UN has spent $67.5 million, and the city and state of New York have spent about $30 million more in site improvements.

• **U. S. Steel Co.**—Firing of the first blast furnace marked the start of production at the $400 million Fairless Works, Morrisville, Pa., near the close of 1952. Now about 85% finished, the plant will have a 1.8-million-ton annual steel-making capacity by July. Facilities include two batteries of 87 byproduct coke ovens each; two blast furnaces, with a combined annual capacity of 1,200,000 tons of pig iron; nine open hearth furnaces; a combination slabbing and blooming mill; an 80-in. hot strip mill and hot-rolled sheet-finishing facilities; rolling and finishing facilities for cold-reduced sheets and tin plate; a billet mill; and a bar mill.

All but three units for the production of sheet and tin products at the Pittsburgh, Calif., plant of the Columbia-Geneva Steel Division were placed in operation; the remainder will be finished this year.

Work on the new plant of Gunnison Homes, Inc., at Harrisburg, Pa., for prefabricating steel military barracks and other buildings is 25% completed at the present time.

• **University of California** — More than $60 million of the $135-million postwar expansion is under construction or has been completed. Nearly $43.5 million more will be spent this year. Major units under way include a $10.5-million teaching hospital and $11.4 million medical science building in San Francisco, and a $22-million medical school and health center in Los Angeles.

• **Utica & Mohawk Cotton Mills**—Reputed to be the largest one-story completely air conditioned textile building in the world, this plant at Mohawk, S. C., provides more than 500,000 sq ft of floor area for production. It was finished last year.

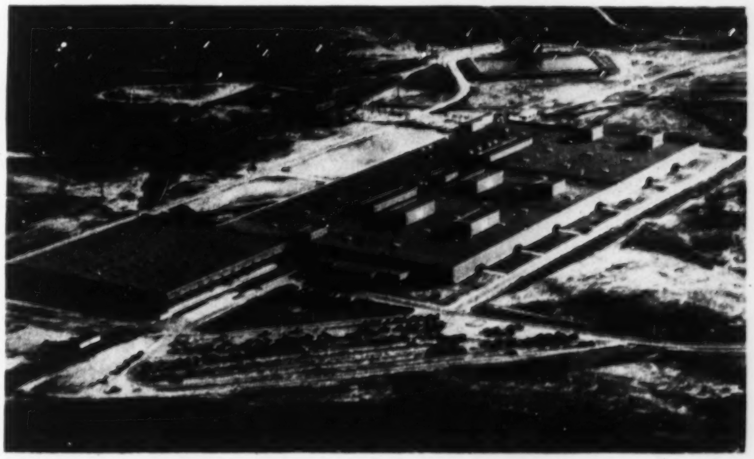
• **Valley Steam Plant** — Construction is under way on the Los Angeles Department of Water and Power $75-million project in San Fernando Valley. When completed, it will add 512,000 kw to the system's capacity.

• **Veterans Administration**—Ten hospitals with 5,700 beds were completed last year at a cost of $87,640,000. Locations are Iowa City, Iowa; Louisville, Ky.; Boston, Mass.; Kansas City, Mo.; East Orange, N. J.; Salt Lake City, Utah; Birmingham, Ala.; New Orleans, La.; Baltimore, Md.; and Philadelphia, Pa. One addition with 544 beds, costing $7,045,000, also was completed. Still under construction at the end of 1952 were 14 hospitals with 9,700 beds, costing $163,350,000. These are in West Haven, Conn.; Chicago, Ill. (2); Brockton, Mass.; Ann Arbor, Mich.; St. Louis, Mo.; New York, N. Y.; Syracuse, N. Y.; Durham, N. C.; Salisbury, N. C.; Cincinnati, Ohio; Oklahoma City; and Pittsburgh, Pa. (2). Also still under construction are four additions with 2,172 beds, costing $35,130,000.

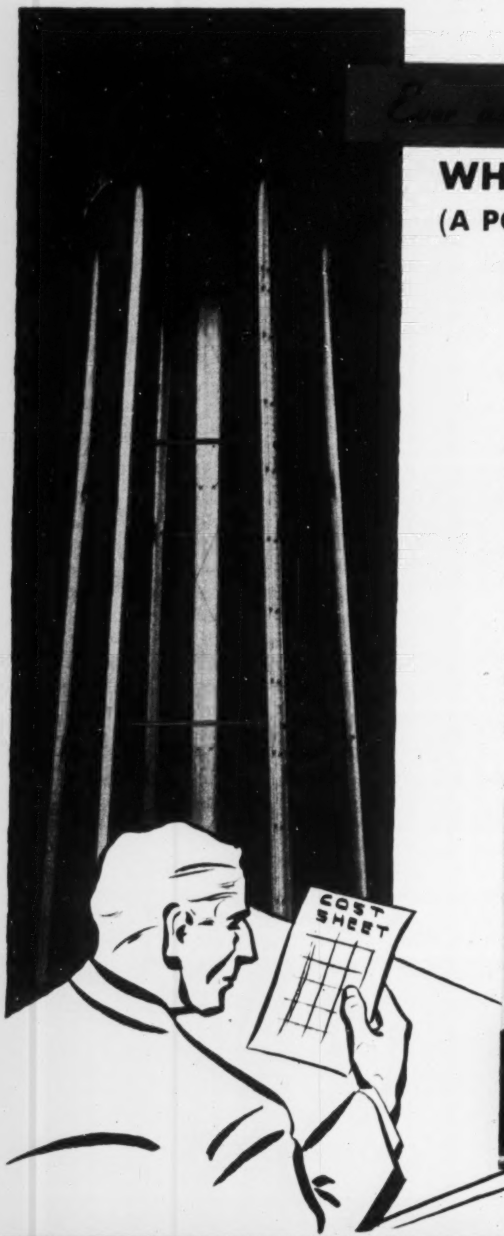
Five more hospitals to provide 4,000 beds have been authorized, but construction has not started.

• **West Dallas Housing Project**—Costing about $35 million, this low-rent public housing development in Texas will consist of 503 one and two-story buildings, sheltering 3,500 families. Initial units will be ready for occupancy this summer, and the entire project should be completed early next year.

• **White Pine Copper Co.**—A construction contract has been awarded for, and work has started on, a development at White Pine, Mich., which will cost $57 million. Included in the contract are underground development of a mine and belt tunnels, a mill to process 10,500 tons of ore daily, a smelter, power plant, appurtenance works. Also, a townsite with roads, housing, schools, hospital and other facilities to accommodate about 3,000 persons. The project will produce about 75,000,000 lb of copper annually.



TEXTILE MILL built for Utica & Mohawk Cotton Mills at Mohawk, S. C., is the largest of its type to be air conditioned. It contains over 500,000 sq ft.



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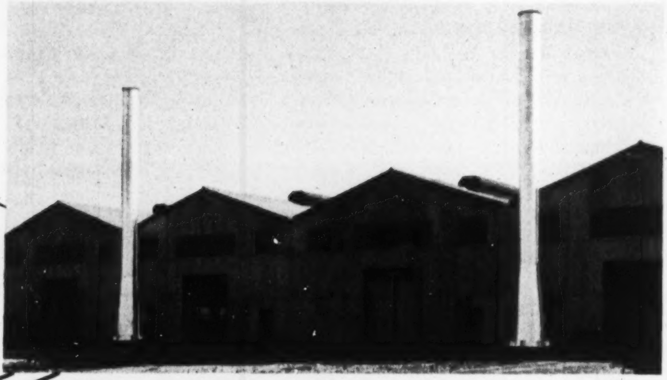
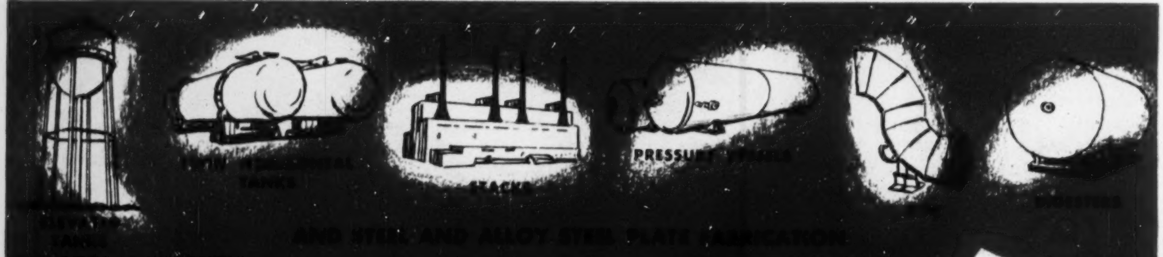


Posey Iron Works self-supporting stacks installed at the Niagara Falls Plant of the International Graphite & Electrode Division of Speer Carbon Co. Height: 50 ft. Diameter: 3 ft.



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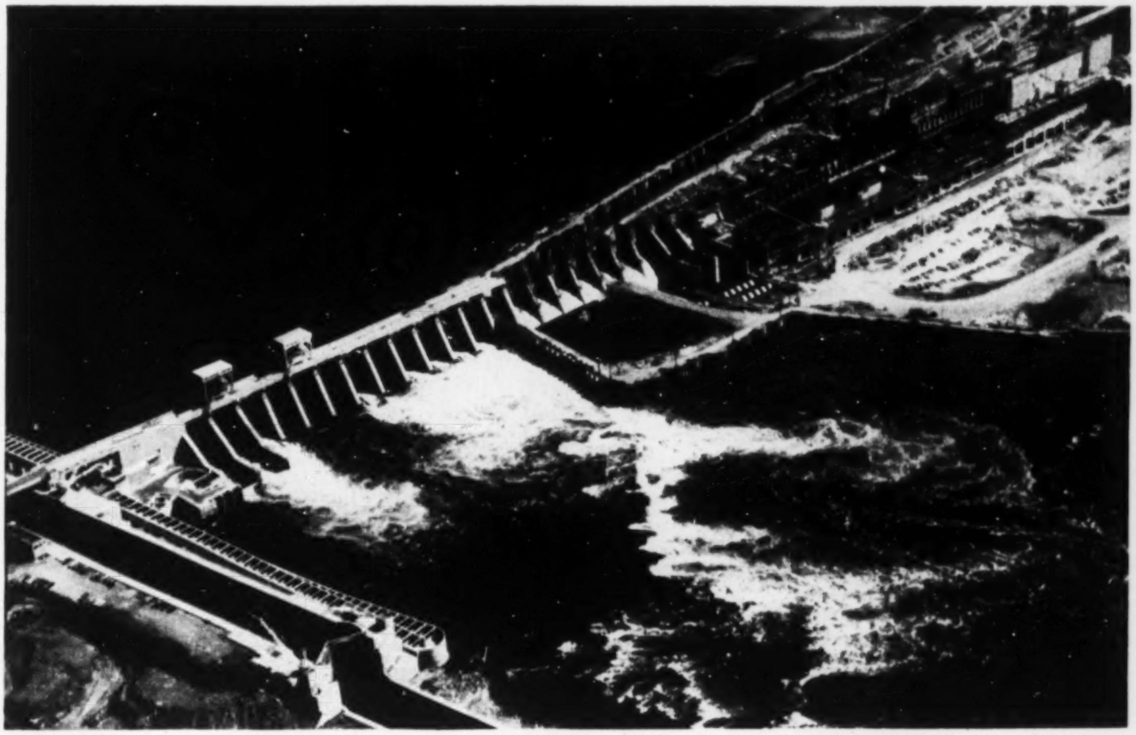


McNARY DAM AND POWER HOUSE stretched clear across the Columbia River for the first time in 1952. First power is due in December, 1953, after some six years of construction.

Techniques and trends . . .

River use and control

No progress was made during 1952 toward adoption of a national policy for the orderly development of the water resources of the nation's great rivers. It is now more than two years since the President's Water Policy Commission submitted its report and nearly that long since the commission sent the President its draft of legislation designed to give effect to its recommendations.

What happened to the recommended legislation is anyone's guess. In February of last year, after months had gone by without any legislation being proposed to Congress by the President, the commission made its proposal public for the first time, presumably in an effort to keep the subject before the public, but still nothing happened. What appears most probable is that the commission's recommendations were not acceptable to the President or his closest advisors. For example, the commission did not recommend creation of river-valley authorities, which President Truman favored.

The need for a definite national water policy is just as great as it was when the President named the commission. Most of its recommendations were sound, and all the data it collected will be helpful in determining what a national water policy should be. But knowing how new federal administrations work, if the Eisenhower administration decides to propose a national water-resource policy to Congress, it will set up a new commission and order a new assembly of the data that such a commission should have.

• **Flood-control works**—The one big flood during 1952—in the Upper Missouri River valley—clearly demonstrated what flood-control reservoirs and flood walls can do to reduce damage and supported the claims that the Corps of Engineers make for this type of public work. Because all the reservoirs that are needed above Omaha have not yet been built, the levees and flood walls of that city were put to a severe test and had to be topped out in some instances. But they protected most of the city from destructive inundation. And down at Kansas City, where the Kaw River did so much damage a year earlier because its flood-control facilities were still largely in the blueprint stage, the repaired levees along the Missouri held that stream within bounds.

To cut the crest of future floods to manageable heights, work continues on the big dams along the upper Missouri River—Garrison, Gavins Point, Oahe and Fort Randall. And on the Kaw River, despite strong local opposition to taking fertile valley lands for flood reservoirs, work is being started on Tuttle Creek reservoir, near Manhattan, Kansas.

Elsewhere, on such rivers as the Ohio and its tributaries, the Lower Mississippi, Arkansas and Red Rivers and in the Central Valley in California, large sums are being spent on the continuation of major flood-control programs. Lesser sums are being spent in many other places.

Similarly, large expenditures were made during the last year and are planned for this year on numerous multiple-purpose projects in which power rather than flood control is the dominant factor. Work on the Columbia River falls into this category. That there will be less emphasis on this type of federal power projects under the new administration is probable.

• Power from the St. Lawrence—That probability could be a controlling factor in decisions with respect to power development on the St. Lawrence and at Niagara. It could even have a bearing on the Supreme Court's finding with respect to private development of power at Roanoke Rapids in North Carolina. Should the court find that past acts of Congress with respect to development of the water resources of the Roanoke River indicated that Congress intended that the power should be developed by a public rather than a private agency—as the outgoing administration had hoped the court would—it is conceivable that the new administration might ask Congress to amend the statutes to permit private companies to cooperate in such river-development work.

More significance, however, attaches to the possibility that the change in administration may result in ending the long deadlock concerning power development on the St. Lawrence and development of the additional power that has been available at Niagara Falls for some time. Most observers in Washington now believe that the Federal Power Commission soon will authorize the Power Authority of the State of New York to join with the Hydro-Electric Power Commission of Ontario in development of the power resources of the international section of the St. Lawrence River.

And if the commission sees its way clear to take that step, there would appear to be no reason why it should not authorize the New York power authority to undertake development of the power now going to waste at Niagara. A more logical plan would be to authorize the Niagara Falls Power Co. to make that development as an extension of its present facilities, but such a step might be too radical a departure from the trend of thinking in Washington for the past twenty years.

• Fewer big reclamation projects—The effect of the change in thinking in Washington toward water-power development probably will be much more pronounced in the arid West than in the East. There—with the blessing of Washington—many projects having large power possibilities have been promoted by the Bureau of Reclamation. Outstanding among the recent ones is the controversial Hell's Canyon project. Such projects will get more objective study in Washington in the years just ahead.

But there is more behind the new-project planning of the Bureau of Reclamation than building a greater power empire for the Department of the Interior. The plain truth of the matter is that the bureau is running out of big jobs to build. And unless there are new large-scale authorizations soon, the bureau's fine technical staff may have to be cut drastically. The biggest two irrigation-power jobs that the USBR has ever had are nearly completed—the Columbia Basin project and the Central Valley project. These works have been top manpower users for two decades. And during 1952 two of the USBR's biggest postwar dam projects—Hungry Horse and Davis dams—were dedicated and are virtually complete.

• More work on the Colorado River—There still is much reclamation work in the west to do—much that is economically justifiable. The greatest possibilities lie in the Colorado River basin. Development of this area has been slowed by interstate differences. In the upper portion of the basin, the states have been slow to come to agreement on division of the water allocated to that area. And, seemingly, they have been even slower to urge construction of worthwhile projects.

In the lower part of the basin, the renowned Arizona-California controversy has kept needed projects from being authorized. For example, construction of Bridge Canyon Dam is held up while the argument rages over the Central Arizona project—the borderline nature of which is indicated by the fact that repayment terms of reclamation law must be liberalized to make it justifiable. Meanwhile, both publicly and privately owned utilities in the Pacific Southwest are building steam power plants to meet their growing needs.

• State to take over Central Valley?—Sentiment is growing in California for greater state participation in reclamation work. Money has been appropriated to study the ways and means of state purchase of the federally constructed Central Valley project. Beside that, the state has come up with a $2-billion state-wide diversion proposal that would take water from northern California all the way to the Mexican border. Another even more grandiose scheme is under serious consideration.

But the likelihood of these things coming about soon seems slim. Although credit of the state is good, taxes in California almost surely will be increased this year or next to finance expanded school and highway construction programs. The taxpayers may not be willing to embark also on large-scale water use programs until the need of such works is much more dramatically presented to them.

Some major river use projects

• Roanoke River System—Construction of **Philpott Dam** on the Smith River, a treacherous tributary of the Roanoke River in Virginia, is nearing completion, at a cost of $13,300,000. It will store 82,400 acre-ft for flood-control and 111,000 acre-ft for power development. Buggs Island Dam on the main river, now called the **John H. Kerr Dam**, was completed last year. It will store 1,278,000 acre-ft for flood control and 1,046,000 acre-ft for power.

• Tennessee Valley—With closure of **Boone Dam** on Dec. 16, 1952, TVA had built its 19th dam in 19 years. The first TVA-built dam—Norris—was started in 1933. Boone is a multi-purpose structure on the South Fork of the Holston River in northeast Tennessee. It is a gravity dam, 160 ft high with concrete spillway, powerhouse, and non-overflow sections across the main river channel, plus an earth and rock fill forming the remainder of the structure. First of its three 25,000-kw units is scheduled to start generating this month.

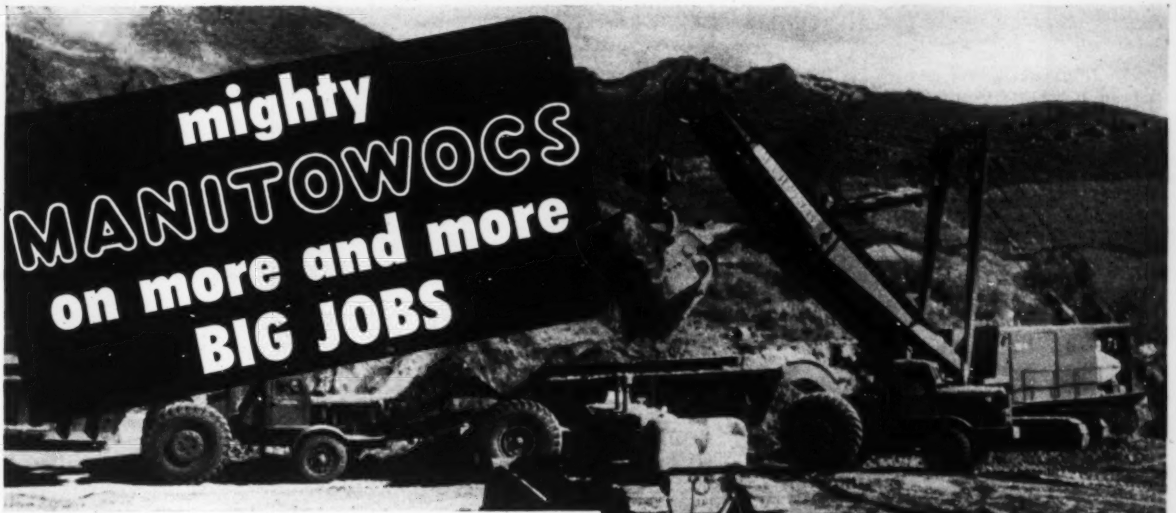
Ten miles downstream from Boone Dam the **Fort Patrick Henry Dam** is rapidly taking shape. This 95-ft-high concrete gravity structure is scheduled for closure next November. It will have two generating units of 18,000-kw capacity each.

All empty stalls that were left in TVA's main-river dams at the time they were constructed have now been filled. During 1952 the last two of six 36,000-kw units at **Pickwick Landing**, one of four 24,300-kw units at **Guntersville**, and one of four 27,000-kw units at **Chickamauga** came into operation. The powerhouse at old **Hales Bar Dam** has been extended and two 24,300-kw units installed. On the tributary projects, generating units are being installed in the two vacant stalls at **Cherokee**, the one at **Douglas**, and the one at **Fontana**. A 58,000-kw reversible pump-turbine unit for the last empty stall at **Hiwassee Dam** is scheduled for operation in 1955.

• Southeast states—Jim Woodruff Lock and Dam, on the Fla.-Ga. state line where the Flint and Chattahoochie come together to form the Appalachicola River, is 48% completed. The lock and 1,634-ft fixed-crest spillway of this $46.4-million project were finished in '52. Work started on the gated spillway and powerhouse will carry through 1953.

Buford Dam, 35 miles northeast of Atlanta, Ga., on the Chattahoochie River, suffered through lack of funds last year. The $41-million, 192-ft-high earthfill project is still only 7% finished, construction during 1952 having been limited to saddle

(*Continued on page 109*)



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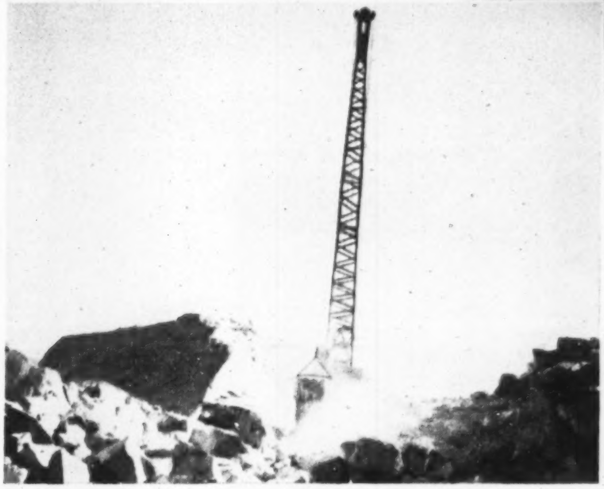
PALISADES DAM — Two Model 4500's owned by J. A. Jones and C. H. Tomkins each handling over 10,000 yds. in 20 hr. shifts.



CHIEF JOSEPH DAM — Model 4500 Dragline owned by Columbia River Constructors, on a really tough excavation job at this huge dam near Bridgeport, Wash.

FOLSOM DAM — Model 4500 Dragline owned by Merritt-Chapman & Scott-Savin, loading trucks. Another Manitowoc 3900 also on job.

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FLASHBOARD EXTENSIONS to the Omaha-Council Bluffs floodwall system, together with hastily raised levees, prevented an estimated $60 million of damage during the Missouri River flood last April. The flood crest was 27.27 ft in this photo.

dikes, forebay and tailrace excavation, plus some tunneling.

Demopolis Lock and Dam, on the Tombigbee River in Alabama, 218 mi north of Mobile, is now 25% completed. Lock concreting should finish and dam concreting should begin this year on the $20.5-million project. The 110x600-ft-lock will have a 40-ft lift and will replace four existing low-lift structures.

These three Southeastern river projects are all Corps of Engineers work.

• **Aluminum Company dams**—Owned by Nantahala Power and Light Co., a subsidiary of the Aluminum Company of America, are three power projects on the east fork of Tuckasegee River, in western North Carolina. **Cedar Cliff Dam** (7,500-kva) was placed in operation in August, 1952. **Bear Creek Dam** (10,000-kva) will be completed next summer. **Tennessee Creek** project (2 dams with a Y-shaped diversion and penstock tunnel that will connect the reservoirs with a 12,000-kva plant) is scheduled for completion in mid-1954. At present, work is progressing on the tunnel, and dam work should begin this spring. All dams are rockfill, with weighted impervious blankets on the upstream sides. Height of the dams ranges from 140 ft to 223 ft.

• **Florida flood control**—As part of a $208-million dollar program for protecting agricultural lands in the Florida Everglades from flooding and for storing flood waters for agricultural and domestic use, the Corps of Engineers has completed 125 mi of levees in the East Coast levee system for the Central and Southern Florida Flood Control District. Under construction are: 26 more mi of levee to begin the encirclement of agricultural lands and form part of the western boundary of Conservation Pool No. 1; 10 mi of new canals; one salinity control structure; three spillways; and a pumping station of 4,800 cfs capacity. Congress has authorized expenditure of $68 million as the federal share of the first phase of the project.

• **Ohio River Basin**—The Ohio River Division of the Corps of Engineers expects to place more civil works construction under contract during the first half of this year than it did during the entire calendar year 1952. Contracts awarded last year totaled $21.7 million, compared with $22.3-million worth to be awarded by July 1 of this year. Work completed last year totaled $29.7 million.

Two major dam projects were essentially completed in the Ohio River Valley last year: The $9.5-million **East Branch Clairon River Dam** near Johnsonburg, Pa., to provide a maximum of 38,700 acre-ft of flood control in the winter and 64,300 acre-ft of low water regulation in the summer. **Cagles Mill Dam** on Mill Creek in Indiana will provide flood control and conservation in the Wabash River Basin. Its total cost is $4.1 million. The $48.6-million **Conemaugh Dam** project, to furnish 270,000 acre-ft of storage for the flood protection of Pittsburgh and the upper Ohio Valley, is 89% finished. The entire project will be completed this June. A third 18,000-kw hydro power unit is being installed at **Dale Hollow Dam** on the Obey River in Tennessee, to bring the total generating capacity up to 54,000 kw. It will be placed on the line this May.

Current navigation improvement work in the Ohio River Valley includes three major projects: **Old Hickory Lock and Dam** on the Cumberland River in Tennessee will provide an 84x400-ft lock chamber with a 60-ft lift. The $52-million project, now one-third completed, will be finished in the summer of 1956. It will have four 25,000-kw hydro power generators. Three of the units will go on the line in 1955 and the fourth in 1956. Closure of the combined earthfill and concrete dam will be made in January, 1955. The lock will be finished in November of this year. **Cheatham Lock and Dam** on the Cumberland River in Tennessee will cost $32.2 million. Its $6-million 110x800-ft lock is in temporary operation. The concrete gravity dam will be closed in January, 1955. One of its 12,000-kw hydro power units will go on the line in 1955 and the other two in 1956.

Reconstruction of **Lock No. 2** on the Monongahela River is 64% finished. The 56x360-ft auxiliary lock is in operation. The main lock will be 110x720 ft. Total project cost is $17.2 million.

Six major flood and local protection projects now under way in the **Ohio River** valley will protect the Kentucky cities of Louisville, Ashland, Covington and Maysville, and the Indiana cities of Vincennes and New Albany. Total federal cost of the six projects is $56.4 million, and local costs are $4.2 million. The six projects entail the construction of 21.5 mi of earth levees, 10.8 mi of concrete flood wall, 23 gate openings, and 46 pumping stations. One project will be finished about the end of this year.

• **St. Anthony Falls**—Construction of the Corps of Engineers' $7-million lower lock and dam in the Mississippi River at Minneapolis was advanced to 22% of completion last year. When the entire $26.5-million project is finished in 1959 it will extend the present 9-ft channel 4.6 mi above the present head of navigation at Minneapolis.

• **Upper Mississippi Valley**—Initial construction was started last year on the new **Lock 19** at Keokuk, Iowa, which will supplement the old, obsolete Lock 19. The $19-million project is scheduled for completion in 1958. Construction was also initiated last year on a $1.9-million project—involving a diversion channel and two Mississippi River cut-offs—to alleviate flood conditions near **Aitkin, Minn.** Completion of the $1.3-million multiple-purpose **Orwell Dam** on the Otter Tail River in Minnesota last year substantially advanced the Army Engineers' flood control, drainage, water supply and pollution abatement program in the Red River Basin. The $12-million project will be finished in 1957.

• **Middle Mississippi**—Construction was pushed last year on 13 of 19 flood protection projects along the Mississippi River between Alton and Gale, Ill. Projects range from 6% to 97% finished. When completed, the $75-million project of levee raising, new levees, closure structures and pumping plants will furnish flood protection for 300,000 acres of land.

• **Lower Mississippi**—Last year the Corps of Engineers awarded $32-million worth of construction contracts for flood control and river development in the Lower Mississippi River basin below Cairo, Ill. Contracts totaling $14.5 million are expected to be awarded by July 1 of this year. The overall $1.3-billion program for flood control and other river development on the lower Mississippi and its tributaries is 63% finished.

At the year's end, a total of 1,277 miles of the 1,599-mi main line **Mississippi levee system** had been completed to project grade and section, and 271 mi of the 464-mi bank stabilization on the **Ohio River** and the Mississippi River, below Cairo, had been finished.

Other important projects include: Work completed on the $49-million **Memphis Harbor** includes closure of the dredge-fill dam, the approach roadway, industrial fill, pile dikes and wave-wash protection on the dam. A total of $9.2 million has been allotted for the construction of levees, floodwalls, reservoirs and pumping stations to protect Memphis from floodwaters of the Mississippi. The total project will cost $13.4 million. The **Morganza Floodway** with its $20-million control structure, to divert Mississippi floodwaters into the Atchafalaya Basin for flood protection below Morganza, La., is essentially complete. Construction of **Blakely Mountain Dam** on the Ouachita River in Arkansas is on schedule. Of the $32.7-million project cost, $24.2 million has been allotted to date. The completed reservoir will have a gross storage of 2,768,000 acre-ft, while the power plant will have an installed hydro power capacity of 75,000 kw.

Construction funds totaling $19.3 million have been allotted to date for construction of the $33-million **Texarkana Dam** on the Sulphur River in Arkansas. It will form a single-purpose flood control reservoir with a capacity of 2,509,000 acre-ft. Two new dam and reservoir projects to be constructed in the Lower Mississippi Valley are: The $20-million single-purpose flood control **Ferrell's Bridge Dam** on a tributary of the Red River; and the $25.5-million **DeGray Dam** on a tributary of the Ouachita near Arkadelphia, Ark.

• **Southwestern states**—Contract awards during 1953 for civil works construction in the Southwestern Division of the Corps of Engineers will be more than double those of last year. New projects will account for a large portion of the $83-million construction program this year. Contracts awarded last year totaled $39 million.

Six dam and reservoir projects with a combined flood control storage of 3,800,000 acre-ft became operable last year. Five other reservoirs now under construction will furnish 2,450,000 acre-ft of additional flood storage, bringing the total in the division up to 15,000,000 acre-ft.

Four hydro power installations in the Southwestern Division (**Bull Shoals, Fort Gibson, Tenkiller Ferry** and **Whitney Dam**) will go into production this year with an initial combined capacity of 269,000 kw. **Dennison and Norfolk** power plants have a combined present capacity of 140,000 kw.

• **Texas dams**—The $12.8-million **Belton Dam** project on the Leon River, which will furnish 887,000 acre-ft of flood control storage and 125,700 acre-ft of conservation in the Brazos River watershed, is 50% finished. The earth embankment and concrete spillway will be completed late next year, and the entire project finished by the middle of 1955. **Whitney Dam** on the Brazos River is 95% finished. Its power house will be finished by this June. The $41.5-million project will store 1,631,000 acre-ft of flood water and 131,700 acre-ft for hydro power.

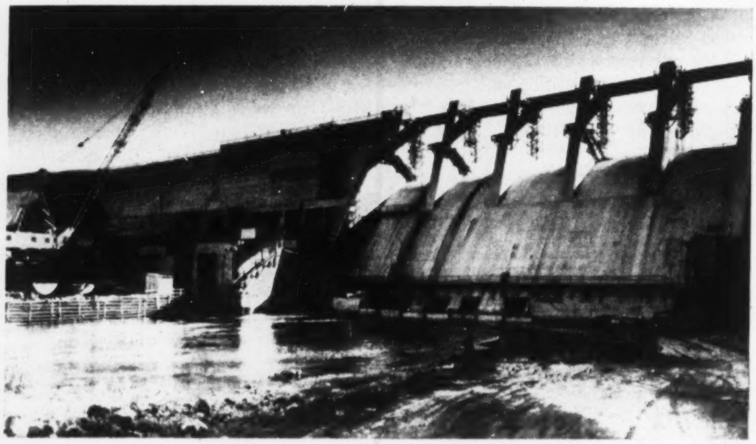
Two of the four major dams in the Trinity River watershed are completed. They are the $11.3-million **Benbrook Dam** and the $11.4-million **Grapevine Dam.** Together they will provide 408,300 acre-ft of flood storage and 232,500 acre-ft for conservation. **Garza-Little Elm Dam,** now 38% finished, will be completed in 1954 at a project cost of $24.6 million. It will store 526,700 acre-ft of flood water and 436,000 acre-ft for conservation. **Lavon Dam** will be finished by this June at a total cost of $11.5 million. Its 9,500-ft earth fill embankment will provide 275,600 acre-ft of storage for flood control, and 100,000 acre-ft for conservation.

• **Arkansas dams**—The largest of the new civil works programs to be initiated this year in the Southwestern Division of the Corps of Engineers, is **Table Rock Dam** on the White River in Missouri and Arkansas. The main dam contract is scheduled to be awarded this May, and the entire $78.61-million project is planned for completion in 1958. The dam will have a 4,800-ft earth-fill embankment and a 1,600-ft concrete gravity section. It will furnish 760,000 acre-ft of flood control storage and 2,702,000 acre-ft of storage for hydro power. **Bull Shoals Dam,** also on the White River in Arkansas, is 90% finished.

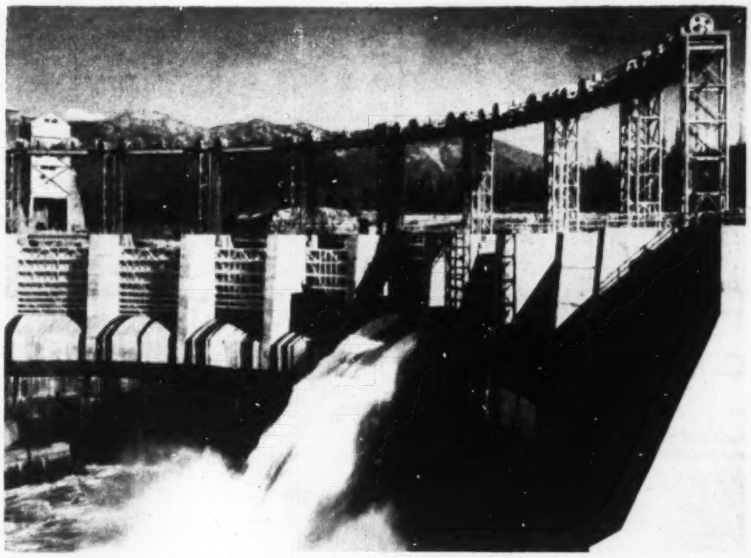
• **Oklahoma dams**—Two big dams are under construction in Oklahoma. One is the $43-million **Fort Gibson Dam** on the Grand (Neosho) River, which is 90% finished. It will furnish 922,000 acre-ft of flood control storage and 365,000 acre-ft of hydro power storage. The other is the $22.8-million **Tenkiller Ferry Dam** on the Illinois River, which is 88% finished. It will provide 600,000 acre-ft of flood control storage and 630,000 acre-ft for hydro power.

• **New Mexico projects**—Now 65% finished and scheduled for completion by June of this year, is the $4.5-million **Jemez Canyon Dam** on Jemez Creek in the Rio Grande watershed. It will be 780 ft long, and will store 73,000 acre-ft of flood water. Levee construction and protective works in the **Albuquerque** area will be awarded this year. This is part of an $11.8-million floodway project along the Rio Grande extending from Elephant Butte Dam in southern New Mexico to Espanola, above Albuquerque.

• **Southwestern floodways**—Five other major Corps of Engineers' floodway projects are under construction in Texas, Oklahoma and Kansas. The $9.5-million **Fort Worth Floodway**—involving 10 miles of channel improvements and 12 miles of levees and



BOONE DAM—the 19th built by TVA in 19 years—becomes the 29th major dam in the Tennessee Valley system. It is on the South Fork, Holston River.



CABINET GORGE DAM in northern Idaho was largest private power project completed in Pacific Northwest. It will add 200,000 kw to Washington Water Power Co. system.

draining structures—is 40% finished. It is scheduled for completion by June, 1954. The $9-million **Dallas Floodway,** just getting under way at present, is at present scheduled for completion in 1955. Flood protection in the vicinity of Wichita, Kan., will be provided by the **Wichita and Valley Center Floodway.** The $20-million project, now 13% finished and scheduled for completion in 1957, consists of 31 miles of diversion canals and floodways, 91 miles of levees, a 400-ft floodwall, and 5 control structures. The $6.9-million **Hutchinson, Kan., Floodway** is 10% finished. It will be completed by June, 1954. Construction is just getting under way on the $17-million **Oklahoma City Floodway,** to be completed by the middle of 1957.

- **New Mexico flood control**—Region 5 of the Bureau of Reclamation—which covers Texas, eastern New Mexico and parts of Kansas and Colorado—awarded nearly $1-million worth of contracts last year for flood control, irrigation and other water-use benefits in New Mexico. This year it expects to place $2.3-million worth of similar work under contract.

The initial 21-mile emergency channelization program on the **Middle Rio Grande,** south of Albuquerque, will be finished this April, and a second 15-mile section will be finished by the end of this year. The overall program, estimated to cost $72 million and expected to be completed by 1960, includes flood control and major drainage, including channelization, sediment entrapment, and reduction of water logged areas.

Construction will start this year on the $2.9-million **Vermejo** project on the Canadian River in northeastern New Mexico. Construction plans include enlargement of three off-stream earth-fill dams and the rehabilitation of the Vermejo diversion dam, siphons, canals, laterals and drains. Now in the advanced planning stages is the **Canadian River** project to supply municipal and industrial water to 11 cities in the Texas Panhandle.

- **Rio Grande**—Despite delays in deliveries of materials and equipment, the construction of **Falcon Dam** and its two power plants on the Rio Grande 75 miles below Laredo, Tex., is ahead of schedule. On Dec. 1 of last year, the $49-million project was 78% completed on the basis of contract earnings, compared with an elapsed contract time of 71%. Under joint construction by the Mexican and U. S. sections of the International Boundary and Water Commission, the project includes a 31,500-kw powerhouse on each side of the river. It will store 1,685,000 acre-ft of flood water and 2,100,000 acre-ft for conservation.

- **Missouri River Basin**—Two yardsticks measure the tempo of Corps of Engineers construction last year in the Missouri River Basin—$67.6-million worth of construction contracts awarded, and $109.7-million worth of work completed.

Garrison Dam in North Dakota was 52% finished at the end of last year—an increase of 10% during 1952. Scheduled for completion by 1956, this 2-mile long, 210-ft high rolled fill embankment will store 23,000,000 acre-ft of water and have an installed hydro-power capacity of 400,-

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000 kw. It is estimated to cost about $305 million.

Fort Randall Dam in South Dakota was advanced from 46% to 54% finished during 1952. Construction history was made last July 20 when closure was made hydraulically. By year's end the 1,000-ft closure section of main embankment had been raised to a height of 85 ft above streambed. Project completion date is set for 1954, at a total cost of $198 million. The 10,000 ft long, 160-ft high embankment will impound 6,300,000 acre-ft of water and the ultimate installed capacity of the hydro power plant will be 320,000 kw.

Oahe Dam, located six miles above Pierre, S. D., is only 4.5% finished. Its completion date is 1959, at a total cost of $326 million. All three of these mainstem dams on the Missouri are multiple-purpose. Construction of **Gavins Point Dam** near Yankton, S. D., got under way last year and 1,250,000 cu yd of Stage I embankment was placed during the season.

Region 6 of the Bureau of Reclamation covering the Dakotas and parts of Wyoming and Colorado—reached an all-time high last year, with the awarding of $29-million worth of construction and supply contracts. Construction began on six major units of the Missouri River Basin project.

Four of the units are multipurpose dams. They are: **Jamestown Dam** on the James River in North Dakota, to be completed this year at a total project cost of $8.5 million; **Pactola Dam** near Rapid City, S. D., to be completed by 1955 at a cost of $12 million; **Tiber Dam**—a 4,300 ft long, by 196 ft high rolled earthfill structure—just east of the Continental Divide in northern Montana, to be completed by late 1955 at a project cost of $64 million; and the **Missouri Diversion Dam** in Montana, 22 miles downstream from Fort Peck Dam. It will be a concrete-gravity and earthfill structure 76 ft high and 600 ft long. The entire project, including irrigation canals and an 18,000-kw power plant, is scheduled for completion in 1956, at a total project cost of $115 million.

Two major dams were completed last year in Region 6. They are the $4.4-million **Keyhole Dam** on the Belle Fourche River in Wyoming, and the $34-million **Boysen Dam** on the Big Horn River in Wyoming. Its 15,000-kw powerplant went on the line last fall. To be completed this year is the $29-million **Canyon Ferry Dam** and 50,000-kw powerplant on the Missouri River near Helena, Mont. Also started last year were the **Crow Creek Pumping Unit** in Montana, to cost $1.7 million; and the $680,000 **Fort Clark Pumping Unit** in North Dakota. Both will take water from the Missouri.

(*Continued on page 115*)

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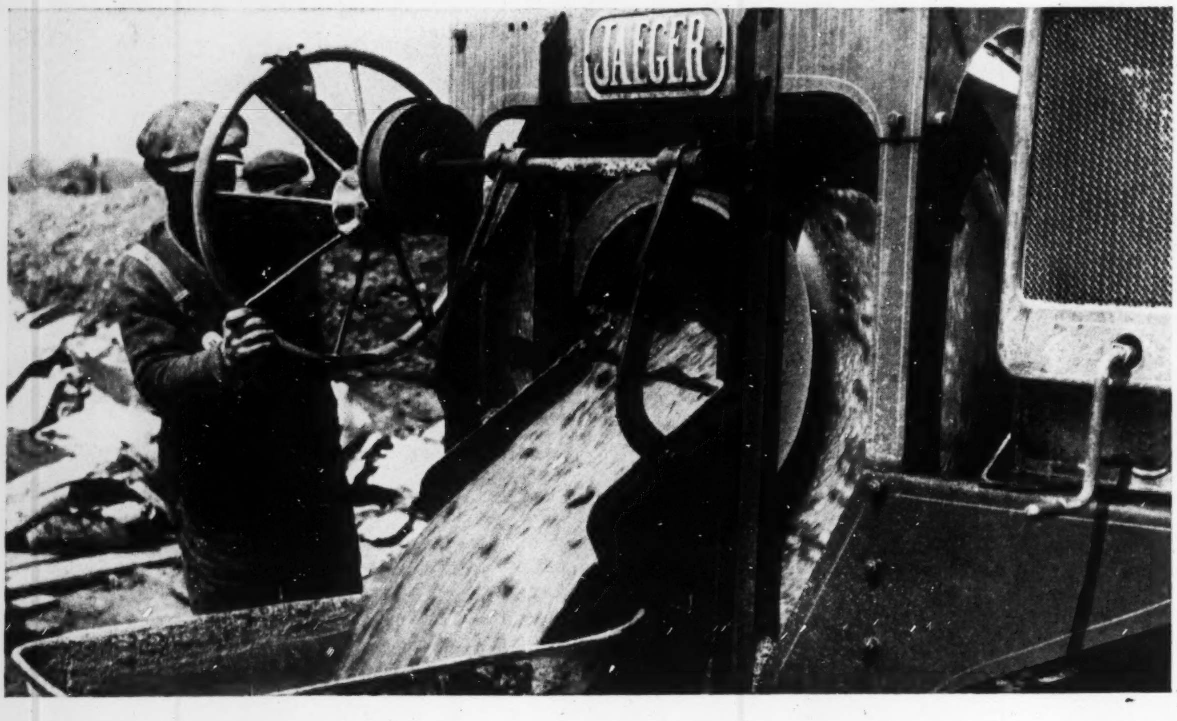

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HAUL ROADS and stage construction of embankment and excavation stand out in bold relief at the $23-million Trenton Dam to be completed this year on the Republican River in Nebraska. Its rolled earthfill embankment will be 145 ft high and 8,400 ft long.

Region 7 of the Bureau of Reclamation—comprising Nebraska and parts of Colorado and Wyoming—awarded $6.6-million worth of Missouri River Basin contracts last year. An estimated $33.4-million worth of construction and supply contracts is expected to be awarded during 1953.

Contracts totaling $11.8 million each will be awarded this year on two important dams. One is **Kirwin Dam** on the North Fork of the Solomon River in Kansas. This $17.8-million project is 10% finished, with completion scheduled for September, 1955. It will be a rolled earthfill embankment 170 ft high and 12,600 ft long. When it is completed, Kirwin Dam will have a storage capacity of 315,000 acre-ft, of which 220,000 acre-ft will be all earmarked for flood control purposes.

The other structure is **Webster Dam** on the South Fork of the Solomon River in Kansas. Its construction was started in January of this year under a $990,000-contract. Completion date is December, 1955, and total estimated cost is $18.2 million. It will impound 271,700 acre-ft of water, of which 200,000-acre-ft will be for flood control. Scheduled for completion this August is the $22.9-million **Trenton Dam** on the Republican River in Nebraska. It is an earthfill dam 145 ft high and 8,400 ft long. Another important project now under construction by the Bureau of Reclamation's Region 7 is the $6.9-million power plant at **Alcova Dam,** 30 miles west of Casper, Wyo. Now 28% finished, it will have an installed generating capacity of 36,000 kw. Completion date is 1954.

- **Colorado-Big Thompson**—After 15 years of construction, this $164-million project in north central Colorado—designed to furnish a supplemental water supply for the irrigation of 615,000 acres of land, and to generate 184,350 kw of hydro power—is 92% finished. Latest estimate of the Bureau of Reclamation places the completion date of all now planned features at June 30, 1955. Major units completed to date include: four dams **(Green Mountain, Granby, Shadow Mountain** and **Horsetooth),** three power plants **(Estes, Marys Lake** and **Green Mountain)** having a total installed capacity of 75,000 kw, one large pumping plant **(Granby),** and 76 miles of canals, conduits and tunnels. Major elements now under construction include the 63,000-kw **Flatiron** power plant and pumping plant, the 31,250-kw **Pole Hill** power plant, and **Willow Creek** dam and pumping plant.

- **Northern California**—Several public and private agencies continue development of the Sacramento-San Joaquin River systems for power, flood control and water supply. Pacific Gas and Electric Co. added a new 29,000-kw generating unit to its existing Salt Springs power house on the Mokelumne River at a cost of $11 million. This included construction of the rockfill **Bear River Dam.** PG&E also started construction of the $25-million, 84,000-kw **Pit 4** project on the Pit River.

Work is proceeding on the $13-million **Cherry River** project in Tuolumne County, a multi-purpose project which will provide for flood control, storage for domestic and irrigation water, and eventual power production. It is a joint project of the city of San Francisco, the Turlock and Modesto Irrigation Districts and the Corps of Engineers. Plans include a 300-ft high, 2,600-ft-long earth-and-rock-fill dam and a 270,000 acre-ft capacity reservoir.

Great strides were made in progress on Corps of Engineers flood control projects in the **Central Valley.** The $24.3 million **Pine Flat Dam** contract is about 90% complete with concrete pouring likely to finish in May and all other work rounded out by next November. This would be nine months ahead of the completion timetable. By early summer, work is expected to be finished on the earthfill **Isabella Dam** on the Kern River, the windup coming a year ahead of schedule on the $5-million main contract. Percentagewise the Isabella project was 93% complete at year's end. After a slow start in getting concrete pouring operations under way, work at **Folsom Dam** moved forward rapidly and the year's end saw about 25% of the $29.4-million main contract completed. The Folsom project's **Mormon Island** auxiliary dam costing $2.2 million was finished.

Meanwhile, the Bureau of Reclamation pushes work to distribute Central Valley project water. Ultimately costing $41.4 million, the **Friant-Kern Canal** distribution systems reached a 42% completion stage in 1952. This compares with 15% a year ago. The USBR is also building the power features at Folsom Dam and the **Nimbus Dam** and power plant downstream from Folsom Dam. Now 22% complete, the Folsom power plant will cost $29.3 million. Nimbus afterbay dam and power plant, to cost $13.8 million, is 15% complete.

- **Cachuma Project, Calif.**—The Bureau of Reclamation's Cachuma project on the Santa Ynez River in Santa Barbara County will provide water for irrigation and municipal use. This $13.5-million **Cachuma Dam is** 91% complete and the $9.3-million **Tecolote Tunnel** 60% finished. Work is progressing on the $9.4-million **South Coast** conduit and regulating reservoirs, now 62% complete, and the distribution systems, ultimately to cost $5.8 million, now 4% finished.

- **Owens Gorge Project**—The Los Angeles Department of Water and Power's Owens River Gorge hydroelectric power project, located 15 miles north of Bishop, Calif., neared completion, with two of its three 37,000-kw plants going into operation in the spring of 1952 and the third scheduled for completion in the spring of 1953. The $49-million project began in 1949.

- **Southern California flood control**—A $3.4-million contract for spillway structure and east section of embankment of the **Whittier Narrows Dam** was completed during 1952. Work was begun on another

(Continued on page 117)

GYRO-FLO supplying air to two wagon drills in a quarry.

NORTH CAROLINA

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$3.8-million project, to include the middle section of the embankment, the **San Jose Creek** diversion channel, and various **San Gabriel River** improvements. Total cost of the Whittier Narrows project will be $36 million.

First unit of outlet works of the $7.7-million **San Antonio Dam,** on San Antonio Creek at the east border of Los Angeles county, was started in 1952.

Improvements on the **Los Angeles River** system during 1952 amounted to only $1.1 million. But work got under way on $1.8-million worth of improvements on Pacoima Wash, with completion scheduled for late 1953. Four contracts estimated at $7 million will be bid early in 1953. The $326-million project will be 35% complete by the end of 1953.

• **Columbia River**—Construction in Columbia River system projects rolled along at a record pace during 1952 and schedules for the new year forecast little if any letup in the stride.

As the year 1952 ended **McNary Dam,** one of seven major river structures, had reached the point where filling of the vast reservoir can begin in April. Initial power generation is expected in December.

The Dalles Dam was shaping up after start in March. Spillway, powerhouse substructure and turbine contracts were let by the year's end. Slated for April award are the powerhouse, relocation of railroad and highway, intake gates for the powerhouse and four generators. Initial energy from the planned 1,122,000-kw plant is due in November, 1957.

Of the other major projects: **Chief Joseph Dam** near Bridgeport, Wash., is 27% complete. The first of three power units, to total 1,024,000 kw, is slated to go on the line in September, 1955. Award for six main turbines at Chief Joseph is expected currently. At **Albeni Falls** on the Pend Oreille River in Idaho, due to be 45% complete at fiscal year end, storage is already helping to alleviate the Northwest's power shortage by release of water for downstream generation at Coulee, Rock Island and Bonneville powerhouses. This dam will be completed in 1956. **Lucky Peak** on the Boise River in Idaho is 60% along. The flood control project is slated for completion in 1955.

In Oregon the **Detroit Dam** on the North Santiam is virtually completed. Power is slated for June and from a companion regulating dam—**Big Cliff**—in October. On the Middle Fork of the Willamette River, **Lookout Point** will be at 65% and the contract for **Dexter** regulating dam and powerhouse will be let in February. The two Oregon Valley projects are a part of the Willamette basin development program involving flood control, irrigation, power.

PINE FLAT DAM on California's Kings River neared its full 440-ft height at the end of 1952. The Corps of Engineers structure was pressed into emergency service in a partly completed state to reduce floods early in 1952.

The Chelan County Public Utility District added three 27,500-kw units to the power plant at **Rock Island Dam** on the main Columbia River under an agreement with the owner, the Puget Sound Power & Light Co. Three more units are scheduled for installation by this spring, with completion of the $33-million dam improvement project scheduled for June 1.

Washington Water Power Co. expects to see the completion of it's $46-million **Cabinet Gorge Dam** and power plant during 1953.

Another large private power project, Pacific Power & Light's **Yale Dam** on the Lewis River in southwest Washington, was virtually finished as the second 54,000-kw generator was tested at year's end for a record 19-month construction schedule costing $26 million.

At the upper extremity of the Columbia River drainage area, work on the main structure of the Bureau of Reclamation's **Hungry Horse Dam** in northwest Montana was essentially completed in 1952. All mass concrete, totaling nearly 3,100,000 cu yd, has been poured. Two of its four 71,250-kw generators went on the line in 1952. A third is scheduled to go on in August, 1953, and the fourth in November, 1953.

In eastern Idaho, construction moved ahead on the multi-purpose, 13,800,000-cu yd **Palisade Dam,** an earthfill structure. Work under a $27.5-million prime contract was begun in June.

Rounding out the Pacific Northwest's hydro-electric power construction program, the Seattle, Wash., City Light Department spent $21.3 million during 1952 on construction of its **Ross** power plant and additions to the **Diablo** and **Gorge** projects, all on the Skagit River.

• **Columbia Basin Project**—As for irrigation works in this area, the Columbia Basin Project, being built in central Washington by the Bureau of Reclamation, will wind up its 20th year of construction in 1953. The project is about 75% completed. Major goals are the irrigation of 1,029,000 acres ultimately and the generating of approximately 2,000,000 kw of hydro-electric power in the plant at Grand Coulee Dam. In the spring of 1953, the first six of an ultimate 12 pumps at the Grand Coulee pumping plant are scheduled to be completed.

Major contracts completed in 1952 were the second and third sections of **East Low Canal**, major waterway ultimately to be 130-miles long; and contracts for laterals and sub-laterals. Among the major contracts outstanding as 1953 begins are pumps and motors for Grand Coulee pumping plant, $3.1 million; fourth section of the East Low Canal, $3.6 million; laterals and sub-laterals in the East Low Canal area, $4.7-million; **Frenchman Hills**

Tunnel, $2.4 million; **West Canal** laterals, drains, wasteways, and protective works, $1.5 million; **Potholes East Canal,** third and fourth sections, and laterals and sublaterals, $5.7 million.

New work also began in 1952 on the **North Side Pumping Division** of the Minidoka project near Rupert, Idaho, another Bureau of Reclamation project in the Pacific Northwest. Ultimate development will provide irrigation supplies for 69,500 acres of new land.

GALVESTON'S SEA WALL is being extended 5,050 ft, using locally contributed funds. Rail-mounted gantry moves heavy steel forms after each 20-ft-section of wall is poured.

- **Lower Colorado River Basin**—At Hoover Dam, three new generating units in the Arizona wing of the power plant are in operation, giving the plant a present total aggregate generator capacity of 1,249,800 kw. Steps have been taken to install an additional 82,500-kw unit in the Nevada wing, where space has been reserved for it. This will complete the plant's total installation of 17 major units and two station service units which altogether, will have a capacity of 1,332,300 kw.

The **Wellton-Mohawk Canal** system on the **Gila** project in southwestern Arizona delivered its first irrigation water in April, 1952, and now furnishes water to some 10,000 acres. Ultimately 75,000 acres on the Wellton-Mohawk division will come under this canal system.

- **Provo River, Utah**—Duchesne Tunnel, 6 miles long, has been concreted and is to be ready for 1953 spring-summer use. The bore, 18 mi east of Kamas, was built as the major part of the $30-million Bureau of Reclamation project. First section was dug pre-World War II, work was then suspended until 1950. It will bring water from the Colorado River watershed through the Wasatch and Uinta ranges to the Salt Lake and Utah valleys as a link in the Provo River project.

- **Weber Basin, Utah**—Work will begin immediately on the initial $2.5-million contract for the $70-million Bureau of Reclamation Weber Basin project. This is for a gateway tunnel 3.3 mi in length to carry water by gravity flow under Wasatch mountains from the Weber River.

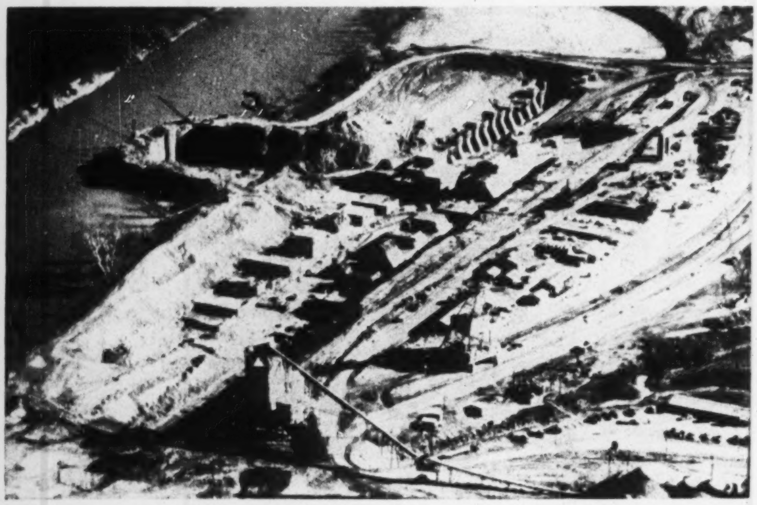
- **Wahleach Project**—British Columbia Electric hydro project went into operation in December. Includes 2,000-ft head power plant and rockfill dam.

- **Kemano-Kitimat project** — Aluminum Company of Canada's 500,000-ton per year aluminum project located near British Columbia coast reached a construction peak in 1952. Kenney Dam, a 3,700,000-cu yd rockfill dam on the Nechako River was completed late in 1952. The 317-ft high structure will form a 20-million acre-ft reservoir by interconnecting eight high-level lakes.

Some 100 miles away a 10-mi, 25-ft dia power tunnel connects with penstock tunnels giving an available head in excess of 2,500 ft. Underground powerhouse at Kemano will be world's largest. Tunnels, penstocks and powerhouse all under construction in 1952 with first of ultimate sixteen 106,000-kva generators due to go on line in 1954. High level transmission line, 50-mi long, connects Kemano powerhouse with Kitimat, site of aluminum plant. First towers of line went up in 1952. Work at Kitimat, to be ultimately a town of 50,000, was restricted in 1952 to dock development and grading. Initial increment of project to cost $200 million with ultimate development in excess of $500 million.

- **Eklutna power project, Alaska**—The first of two 15,000-kw generators is scheduled to go on the line in October, 1954, followed by the second in January, 1955. A $2.6-million contract, awarded last September for the power plant, will provide critically needed hydro power for military and civilian needs in the Anchorage area.

The 15-mi, 115-kv Eklutna-Palmer transmission line was completed in October, and construction of the 26-mi, 115-kv Eklutna-Anchorage line reached the midpoint last November. The 4.5-mi, 9-ft dia trans-mountain diversion tunnel and alterations to the existing Eklutna Dam are 25% finished.



OLD HICKORY dam on the Cumberland River above Nashville, Tenn. is in its first stage of cofferdam construction (left), while construction is being pushed on the lock, guide and guard walls (center). When finished in 1956, the $52-million project will generate 100,000 kw of hydro power.

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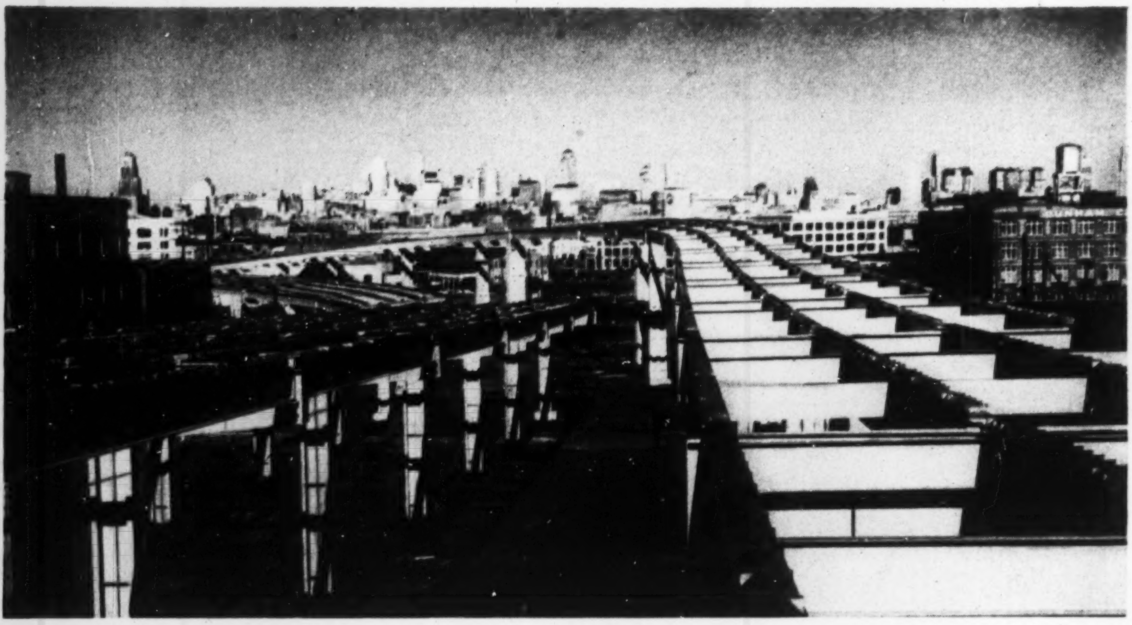


EXPRESSWAYS IN CONGESTED CITIES continued to challenge the imagination of structural designers. This is a section of San Francisco's Bayshore Freeway, where it passes through the city's industrial area toward the business district. All-welded, this viaduct is the largest existing traffic-bearing structure of its type. (Photo by Cal Pictures)

Techniques and trends . . .

Transportation

MOST FORMS OF TRANSPORT set new records in freight moved last year. Railroads still are far in the lead in ton-miles moved, but because of the mounting congestion on the nation's highways, highway transport problems again occupied the spotlight.

Motor vehicle registrations continued to climb, being estimated at 53.4 million last year as compared with 49.2 million two years ago. Judging by the latest available figures for the percent of freight moved by each form of transport, this rise does not indicate a shift of freight to trucks from rails or some other mode of transport—because the percent moved by truck is not rising.

Rather, this rise reflects only a general rise in freight volume affecting all forms of transport, as well as an increase in the number of private automobiles in service.

• Highway adequacy declines—Over against this rise in motor-vehicle use stands the hard fact that the adequacy of the nation's main highway network continues to decline.

On the federal-aid highway system alone, the American Association of State Highway Officials estimated in 1948 that $22 billion should be spent to bring it up to desirable standards. Today the AASHO sets that cost at $32 billion.

Further, the association estimates that only 2,800 mi. of the 37,800-mile Interstate Highway System are up to satisfactory standards.

For the nation's entire highway network, the AASHO puts the modernization cost at $45 billion.

• More road money—Congress gave some recognition to this situation last year when it increased the federal-aid authorization for the fiscal years 1954 and 1955 to $550 million, from the current rate of $500 million, and also authorized an additional $25 million for work on the Interstate Highway System.

However, as the current rate of expenditure on the nation's highways is only at about half what it should be to bring the main roads up to desired standards, much more money has to be found somewhere.

Increasing the federal aid will help, but until the states can make material increase in the amounts they have available to spend annually on new roads, very large increase in federal aid will not be effective because the states will not be able to match the federal appropriations, as they are required to do by law.

All of which means that solution of the highway problem is up to the states and to the people in the individual states.

• Local action fostered—The past year saw two noteworthy steps taken to impress upon the public at large that the road problem is their problem, not one for Congress alone to solve.

The first was the setting up of "Project Adequate Roads," a campaign of the National Highway Users Conference to stimulate local interest in solving the road problems which exist in every state.

The second was the General Motors prize essay contest, which also was designed to start many people to thinking about possible ways to stimulate road construction and modernization.

• More toll roads—An obvious outgrowth of the present lack of adequate highways is the mounting interest in toll highways, which during the past year rose to new heights as a result of the phenomenal financial success of the New Jersey Turnpike. At the year's end there were 750 mi. of toll roads in service and about 1,100 more miles under construction. The number of additional miles under discussion rises daily.

TRAFFIC LINK—An important event in 1952 bridge construction was the opening to traffic of 4.1-mile Chesapeake Bay Bridge, which brings the Eastern Shore of Maryland into closer touch with the rest of the state. Traffic substantially exceeded the engineers' estimates from the start. (Bethlehem Steel Co. photo)

Nevertheless, despite the predictions of the toll-road enthusiasts, toll roads can supply a solution for only a small portion of the nation's highway problem.

• Some progress made—Dark as the general picture is, the fact must not be overlooked that progress toward a better highway system is being made, notably in building arterial roads to serve densely populated areas. The freeways of Los Angeles, Chicago and New York are outstanding evidence of this.

And the search for better methods for building highways and more effective use of available materials goes steadily on. Examples are the new test road of Western Association of State Highway Officials in Idaho and the developing plans of the American Association of State Highway Officials for still more comprehensive tests in Illinois; also Indiana's test road program, and New Jersey's continuing study of unreinforced concrete pavement without expansion joints. The past year also saw additional studies of fly-ash as a substitute for part of the cement in concrete pavements and when mixed with lime as a stabilizing material for highway shoulders.

• Water transport—Waterborne commerce, along with most other forms of transport, increased during 1952; its gain in percent of the total volume was exceeded only by pipelines. Most spectacular was the growth of traffic on the Tennessee River waterway. Estimates made by the Tennessee Valley Authority place the 1952 traffic at 800 million ton-miles as against 582 million the previous year and only 33 million in 1933, before modernization of that waterway was undertaken.

An interesting aspect of the increase in water transport is the very large growth in movements of fuel to big power generating stations. One of the new plants on the Ohio consumes 2,000 tons a day, and the average along that waterway is 1,000 tons. This growth of traffic on the Ohio points to the need for modernization of that waterway through replacement of the older locks and dams.

• St. Lawrence Seaway—All signs point to an early start on the controversial St. Lawrence ship canal. The Canadian government is determined to go ahead with the project regardless of whether or not this country decides to participate in the work. To that end, the Canadian Department of Transport has a staff of engineers making plans for a canal with all locks located on the Ontario side of the river.

Presumably, if Canada bears the whole expense of building the new waterway, tolls will be placed on all users, so that shipping moving to or from U.S. ports will bear part of the cost.

Under the 1909 treaty, tolls for all users must be the same. Hence, if the canal does not develop enough traffic to make it a paying proposition—as opponents predict—Canada will be the loser under the present unilateral plan. Consequently, Canada still should be receptive to proposals from the United States government to make the project a joint undertaking.

Since the new year opened, the Canadian government has advised the U.S. government that the door to participation by the United States still is open, provided participation will not unduly delay a start on the project.

• Airbases: Unfreezing the North—Big news in construction for air transport was the U. S. Corps of Engineers' removal of some of the secrecy surrounding a $185-million airbase that had been under construction at Thule, Greenland, since early in 1951. Hangars there are said to be the largest buildings yet built on permafrost. They have specially insulated concrete floors supported on piles steam-jetted and set by re-freezing in the permafrost. Under the floors are placed special pipes and plenum chambers, for constant circulation of cold air beneath the concrete. Thus building heat does not soften the frozen ground and impair its supporting properties.

Another accomplishment, essential to rapid execution of work at this far-north base (800 miles from the North Pole), was getting the machines, materials and men there. More than 5,000 men, screened and trained for Arctic survival, participated in what has been called the largest peacetime landing operation in Army Engineer history. Part of the group went by air, but 29 construction teams, consisting of 4,400 men and 300,000 measurement tons of combat-loaded cargo, landed on the Thule beach in mid-1951.

At first, stripped-down landing ships served as unloading piers, but soon a new idea in waterfront structures, the DeLong dock, came into the act. This dock is a series of barges with well-holes at their perimeters. Caisson piles are jacked downward through the holes to become firmly seated column supports; jacking continues to raise the barges out of the water, where they become pier decks.

Meanwhile, in Alaska the Corps of Engineers continued to push a construction program, mostly on military airfields, that had been growing since 1949. By this time permafrost has proven to be a minor problem for the bulk of military aviation construction in Alaska, but transportation difficulties continue to be major factors in the high cost of work in that northern territory of the United States. Nevertheless, in 1952 the Army Engineers were able to show that their four-season campaign to attract lump-sum bidders to Alaskan work had been successful. An average of eight contractors had bid on jobs during the year—

PORT FACILITIES—Up and down both coasts, as well as on the Gulf of Mexico and the Great Lakes, ports continued to improve their physical plants. This is Long Beach, Calif., harbor, where a $1.5 million transit shed (left foreground) was completed in 1952. Foundations for a $1.7 million prestressed concrete cotton warehouse are going in at the right. (Pacific Air Industries photo)

almost double the average for 1951, and still higher for the two previous years. 1953 promises to be the biggest Alaskan year yet, from the standpoint of military construction.

• Bridges: the prestressing bandwagon—As engineers and owners in many parts of the country swung their interest still more broadly to prestressing as a technique for bridge construction, more and more emphasis was placed on methods that would minimize hand labor. New individual prestressing jobs cropped up, but the "prestressing factory" grew in importance. In three states, companies were formed to manufacture standard bridge units by techniques previously developed by a Pennsylvania concrete pipe manufacturer. There are other plants, and in Tennessee a block manufacturer was producing bridge beams by lining up special blocks and tying them together with prestressing cables—a modification of the method used in 1950 for the Madison County, Tenn. structure that was America's first prestressed concrete bridge.

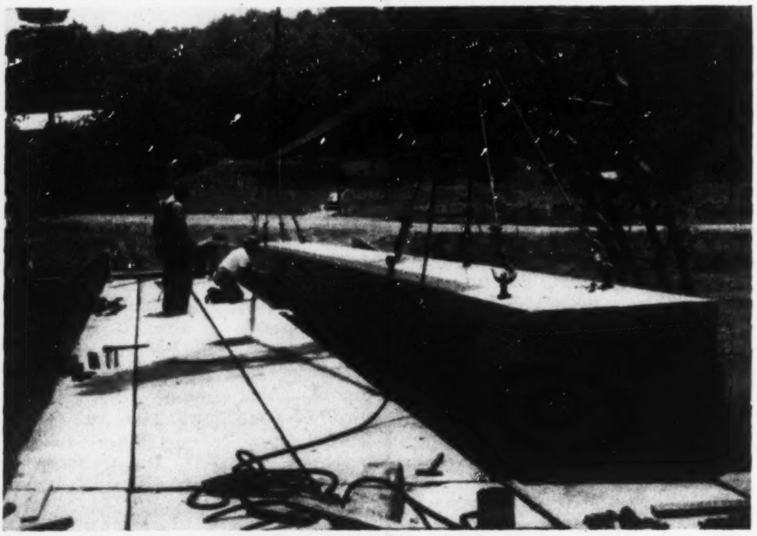
The Pennsylvania bridge-unit maker has two plants. At each, he has permanent casting beds on which he tensions wire prestressing strands before he sets forms and places concrete. The resulting pre-tensioned unit is rectangular in cross-section, having a standard width and three standard depths, depending on the span. Span limit is 50 ft. When delivered to a contractor at a construction site units can be laid directly on abutments and placed quickly in use, since when placed side-by-side their tops form a satisfactory roadway. About 75 of these bridges have been sold in Pennsylvania alone.

Another kind of prestressing factory—for a specific job—is the casting yard for almost 2,200 48-ft stringers that are going into a trestle section of the Lower Tampa Bay Bridge. A trestle length of 17,424 ft gives the 15-mile project the distinction of containing America's longest prestressed bridge. In the casting yard, seven casting beds, for twelve stringers each, and 24 sets of steel forms turn out 36 prestressed beams a week. A labor-saving device is the use of high-strength steel prestressing bars—three to a stringer—which are said to reduce the labor on end anchorages, when compared to parallel-wire systems of post-tensioning.

• Big bridges: more to come—With most of the East Coast's known postwar big bridges completed or under way, interest in prospects for such structures shifts to the interior and to the West Coast. Mississippi Valley projects include a $49 million toll vehicular bridge at New Orleans; and a $15 million Missouri River crossing at Kansas City. The Kansas City plan includes a 1,232-ft suspension bridge, the first of its kind across the Missouri. In addition, the Mississippi legislature has initiated a $6 million plan to bridge the Mississippi at Friars Point, Miss., and Kentucky has authorized a commission to build two bridges across the Ohio at Louisville. Long dreamed-of Straits of Mackinac Bridge, in Michigan, received encouragement when an investment banking firm agreed to underwrite a probable $95 million bond issue. Project length is five miles, including a 3,800-ft suspension bridge.

• West Coast bridges: Unsettled—Several big bridge jobs running into the tens of millions of dollars are the

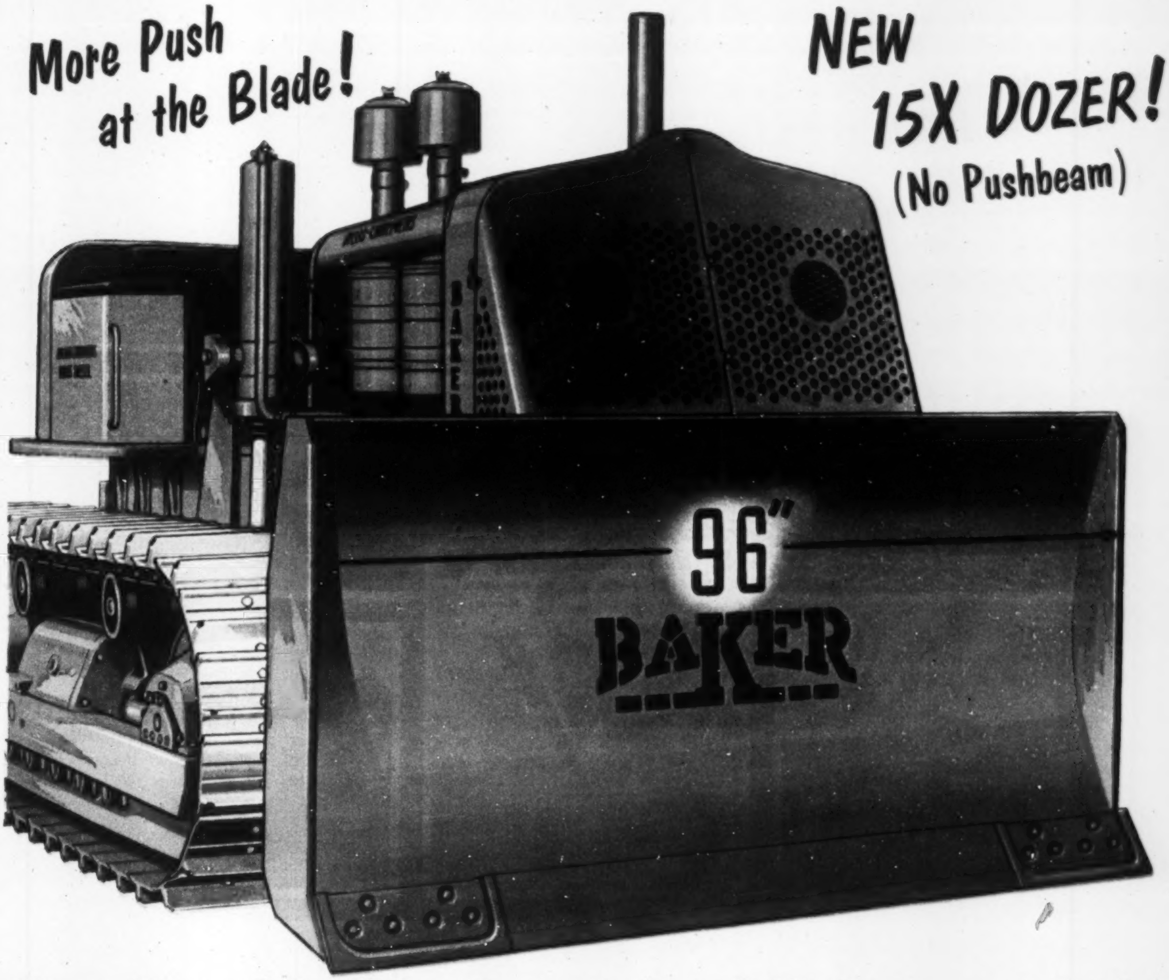
(Continued on page 125)



FACTORY PRESTRESSING came into its own in 1952. This 50-ft unit, manufactured at Pottstown, Pa., settles to place in bridge near Gleniron, Pa. When joint is dry-packed with concrete, and handrails are built, bridge will be ready for traffic. (Ken Smith photo)

More Push at the Blade!

NEW 15X DOZER! (No Pushbeam)



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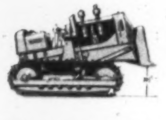
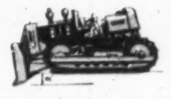


Higher, Faster Lift—full 39½ inches above ground. Unusually good center of gravity affords excellent leverage and maximum traction with blade in any position.



Deeper, Faster Bite—full 15½ inch drop below ground. Positive down pressure, elimination of "bounce", and steeper approach angle puts—and keeps—blade down deep.

Baker's revolutionary, no pushbeam, highway width 9X dozer proved that *it could be done!* Now . . . Baker presents a *bigger, more powerful* edition—the Baker 15X—combining the famous Baker "roll action" 96 inch-wide blade with the 109 drawbar hp of A-C's HD-15.

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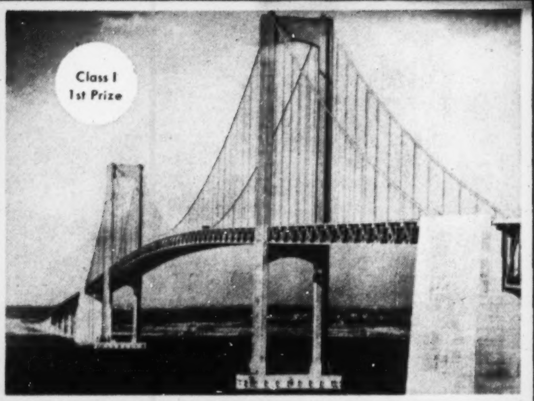
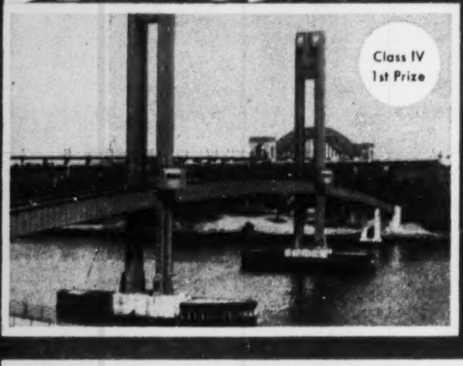
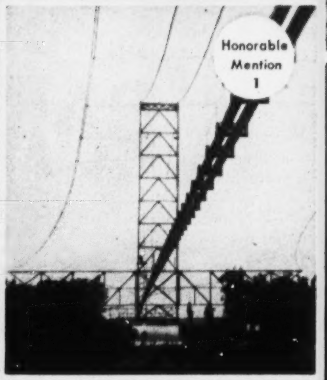
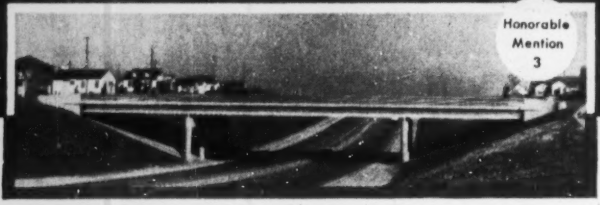


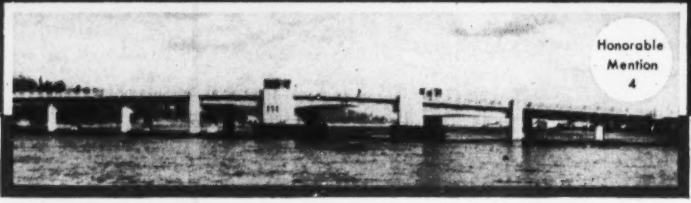
Class II
1st Prize





Honorable
Mention
2





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First Prize for bridges with spans under 400 ft. costing more than $500,000. Forebay Channel Bridge, Davis Dam project, Arizona-Nevada.

CLASS IV

First Prize for movable bridges. Harlem River Pedestrian Bridge from East 103rd. St., Manhattan to Wards Island, New York.

HONORABLE MENTION (1)

Atchafalaya River Bridge carries pipeline across river at Melville, La.

HONORABLE MENTION (2)

Los Alamos Canyon Bridge, Los Alamos, N. M. has 422-ft. span.

HONORABLE MENTION (3)

Morningside Drive underpass of the North-South Freeway at Fort Worth, Texas.

HONORABLE MENTION (4)

Seabright Bridge over South Branch of Shrewsbury River in Monmouth County, N. J.

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centers of controversy on the West Coast. Nearest to construction stage is a $62-million crossing of the north arm of San Francisco Bay. Bids for construction and for revenue bonds were taken in December. But appeals from taxpayers' suits attempting to halt construction of the structure have been holding up the awards. The appeals were made by groups favoring an earth dike across the bay, for both transportation and water-reclamation purposes. Meanwhile, construction of a second crossing of the southern arm of the bay seems hopelessly deadlocked by political differences. State engineers' reports indicate the desirability of paralleling the existing San Francisco-Oakland Bay Bridge. But San Francisco politicos believe a crossing farther south will better serve the over-all future needs of their city. Compromise proposals based on simultaneous construction of both crossings seem doomed to failure because such work would cost more than the $250 million that revenue-bond buyers say any system of bridge crossings in the south arm can support.

A similar controversy is developing in the Puget Sound area. Backed by a board of engineers' report, the Washington Toll Bridge Authority has asked the legislature for funds to design an $82 million crossing from Seattle to Vashon Island and the Olympic peninsula. But, there is support for a more northerly crossing that skips Vashon Island. These differences may be resolved in 1953.

• **Golden Gate Bridge: a scare**–In the "it can't happen here" category was the recording late in 1951 of a wind-induced 130-in. vertical motion in Golden Gate Bridge, the world's longest. Despite the fact that this was the only significant vibration in several years of observation, aerodynamic-conscious West Coast engineers, mindful of the Tacoma Narrows Bridge disaster in 1940, appointed a board to study strengthening of the Golden Gate Bridge. Last month the board recommended bottom laterals for the stiffening truss system. At present the trusses are tied together at their tops only, these top laterals being located under the bridge deck. In cross-section the stiffening system resembles an inverted U. The board says closing the U will increase the critical wind velocity from 50 mph to 80 mph.

• **Boston failure: unstable rockers**–Construction of Boston's Sullivan Square project was delayed at mid-year by a viaduct collapse that aroused controversy among structural engineers. At the common support of two adjacent I-beam spans the respective spans' bearing on a free-standing pier bent was through rockers. The spans were fixed at their other ends. Rockers were shaped like a piece of pie, with the point rounded to small curvature at the upper end; the crust a longer curvature at the lower end. On the evening of May 22, after one span had been concreted, the free-standing bent under the rockers leaned in the direction of the newly concreted span, allowing the unconcreted span to drop to the ground. Four engineering firms blamed the failure on improper placement of rockers by the steel erector –the erected position of the rockers allowing an undue and progressive horizontal thrust on the free-standing bent. Another firm blamed the design, saying that an eccentric rocker should not be used with such a bent, because one column will be pin-connected on top of another. Whenever there is eccentricity the assembly will collapse.

• **Vehicular tunnels**–Also in Boston, agitation continued for a second Sumner tunnel to East Boston and Logan International Airport. Since 1946 the State Planning Board has led a fight for this $28-million tube, saying it is imperative to relieve an "intolerable bottleneck." The legislature has not yet seen fit to approve the project. Meanwhile, in New York the Port of New York Authority has settled differences with the city, over approaches to the proposed third tube for the Lincoln Tunnel, and now is proceeding with construction. In Fort Lauderdale, Fla., a plan to tunnel two streets under a navigation channel is tied up in litigation over financing methods.

• **Port construction**–1952 saw the clean-up of several seaport development plans in the United States. Of regional significance were the accomplishments of state port authorities along the lower Atlantic Coast.

Some major transportation projects

• **Maine Turnpike extension**–An extension of the Maine Turnpike northward from Portland to Augusta, about 65 mi, is expected to be started in 1953. Cost of the work is estimated at $55 million to $60 million.

• **Newburyport Turnpike**–This 23-mi relocation of the main coastal highway north from Boston includes a $4.4-million bridge across the Merrimac River. Bridge substructure was completed in mid-1952, and superstructure work will begin soon, for fall, 1954 completion. Four road contracts are in various stages: Danvers-Boxford, completed and opened in 1952 ($4 million;) Boxford-Newbury, 55% at year-end ($3.5 million;) Newbury-Newburyport, 35% at year-end ($2.8 million;) Amesbury-Salisbury (north of Merrimac, to N. H. turnpike) award early 1953 (est. $3 million.)

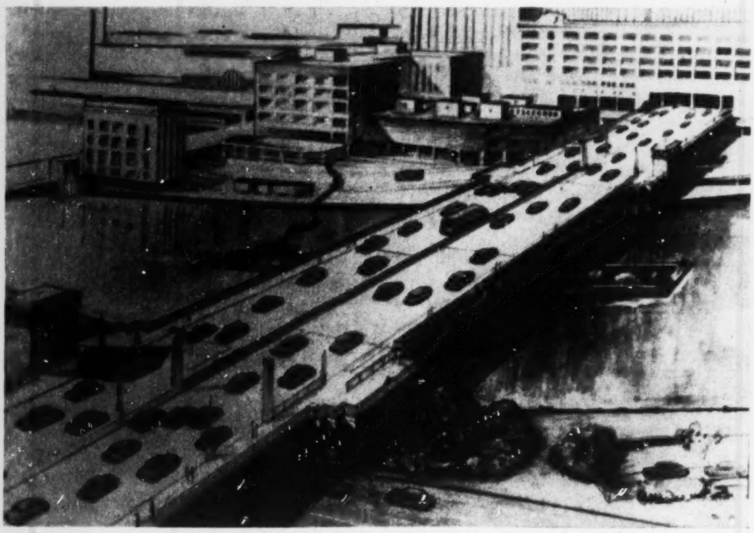
• **Boston vehicular projects**–Most important, because it promises to ease traffic in congested downtown Boston, is the **Central Artery**. About $2 million was committed to contract in 1952, bringing the total to $19.5 million. This work covers 1.9 mi of elevated structure and ramps, and includes a bridge across the Charles River. Final cost of the project, including land, is estimated at $125 million. **Sullivan Square** project, a $4.8-million street grade separation, was nearly complete. **East Boston Expressway**, a partly elevated structure connecting Sumner Tunnel with Logan International Airport and north-shore points, was complete in October at a cost of $10.3 million. It now carries 32,500 vehicles daily.

• **Olneyville Expressway**–Now called the Dennis J. Roberts Expressway, this 1.5-mi route westwart from downtown Providence, R. I., was opened in 1952. Total length of two-lane paved roadways is 5.8 mi, and cost is $8.4 million.

• **New York metropolitan area expressways** –**Major Deegan Expressway**, to be New York City's approach to the New York Thruway, will be 7½ mi long. Land acquisition is complete and most sections are either under construction or in use (two short sections in use). Contracts for structures, grading, bridges, drainage and some paving will be let in 1953. Highbridge Interchange of the **Cross-Bronx Expressway** was opened to traffic and additional work on the expressway put under contract in 1952. The easterly section of the 5-mi expressway has been cleared of tenants, and about $5 million will be let to contract in 1953. Final contracts for a 1-mi piece of expressway, to close the gap between **Van Wyck Expressway** and **Grand Central Parkway**, were let in 1952. This section, to cost $11 million, will be opened to traffic this year. The Kosciusko-Williamsburg Bridge section of the **Brooklyn-Queens Expressway** was completed in 1952 at a cost of $11 million.

• **Port of New York Authority vehicular projects**–The **179th Street Tunnel**, providing a second underground two-lane route across Manhattan Island to the George Washington Bridge was opened to traffic May 5. Total cost was $9 million. **A Lincoln Tunnel connection to the New Jersey**

BOSTON CENTRAL ARTERY—Double deck span (left) of Boston vehicular project connection across Charles River awaits tie-in. Artery will relieve congestion in city's business section, and at movable bridges (center and right).



SIAMESE TWIN—Chicago's $5.1-million bridge over the South Branch of the Chicago River at Congress St. will be completed in 1954. It consists of a separate twin-leaf bascule bridge for each 43-ft roadway. Trunnions are offset, to make skew crossing.

Turnpike was completed at a total cost of $4 million. Ground was broken and work started on the **Third Tube of the Lincoln Tunnel** on Sept. 25. Four contracts, totaling $13.7 million of the estimated overall cost of $90 million, were let in 1952. One of these contracts was for cast iron and cast steel liner plates. The principal tunnel-driving contract will be let soon, with a completion target date of 1957.

• **New York State Thruway**—At the end of 1952, about 55 miles of the 535-mi New York State Thruway were completed and an additional 180 mi were in various stages of construction. Contracts for this work total about $185 millions. It is anticipated that 195 more miles, making up the remainder of the distance between New York City and Buffalo, will be under contract by the end of April, 1953. During 1952, three contracts were let for the substructure of the three-mile long thruway bridge over the Hudson River. Bids were called on the superstructure late in the year but no bids were received. The superstructure was then divided into four separate contracts, two of which were advertised for bids late in December. Under study is a connection with the New Jersey Turnpike.

Approximately six miles will be in New York State. Completion of the main thruway from New York City to Buffalo is now set for late 1954, with the separate spurs to be constructed thereafter.

• **Buffalo vehicular routes**—A combination of projects eventually will speed traffic 18 mi along Lake Erie and the Niagara River, from Lackawanna past downtown Buffalo, N. Y., to Grand Island. Key is a $6 million one-mile **high-level bridge** project over Buffalo River and canal, for which the $1.5-million foundations are complete; superstructure work should get under way this year, for fall 1954 completion; total cost, $6 million. Another link, 1.5-mi **Terrace grade crossing elimination**, was 95% complete Jan. 1; overall cost of this job is $7 million; it involves relocation of two main New York Central Railroad tracks, by placing them underneath the vehicular route. No new work was done on the **Niagara Thruway**, seven miles of which remain to be built, but plans will be ready for two sections this year.

• **New Jersey Turnpike**—Construction of third lanes between Camden and Woodbridge, 65 mi, has been authorized and work will get under way early this year. Also authorized are construction of two additional lanes between the Lincoln Tunnel Interchange and the George Washington Bridge interchange, construction of a 20-mi extension of the turnpike from the George Washington Bridge interchange northward to connect with the New York State Thruway, an 8-mi connection across Newark Bay to the Holland Tunnel, a 5-mi connection with the Pennsylvania Turnpike, including a new Delaware River Bridge, and a 58-mi east-west toll highway across northern New Jersey. No date for the start of any of these projects has been set, but first priority is to be given to the Pennsylvania Turnpike connection and Holland Tunnel connection.

• **Garden State Parkway**—At the end of 1952, 23 mi of the 165-mi Garden State Parkway in New Jersey were open to traffic, and 3 more miles were under construction. A contract also had been let for the substructure of the river spans of the Raritan River Bridge. It is expected that the entire parkway will be put under contract in 1953. Cost is estimated at $285 million. Completion is expected to take about two years.

• **Pennsylvania Turnpike extension**—A contract was let in November for the first work on a 33-mi extension of the Pennsylvania Turnpike from its present eastern terminus to the Delaware River below Trenton. Estimated cost of the work is $50 million to $60 million. This work does not include any part of a new bridge over the Delaware River, to be built jointly with the New Jersey Turnpike Authority, to form a connection between the two pikes.

(*Continued on page 129*)

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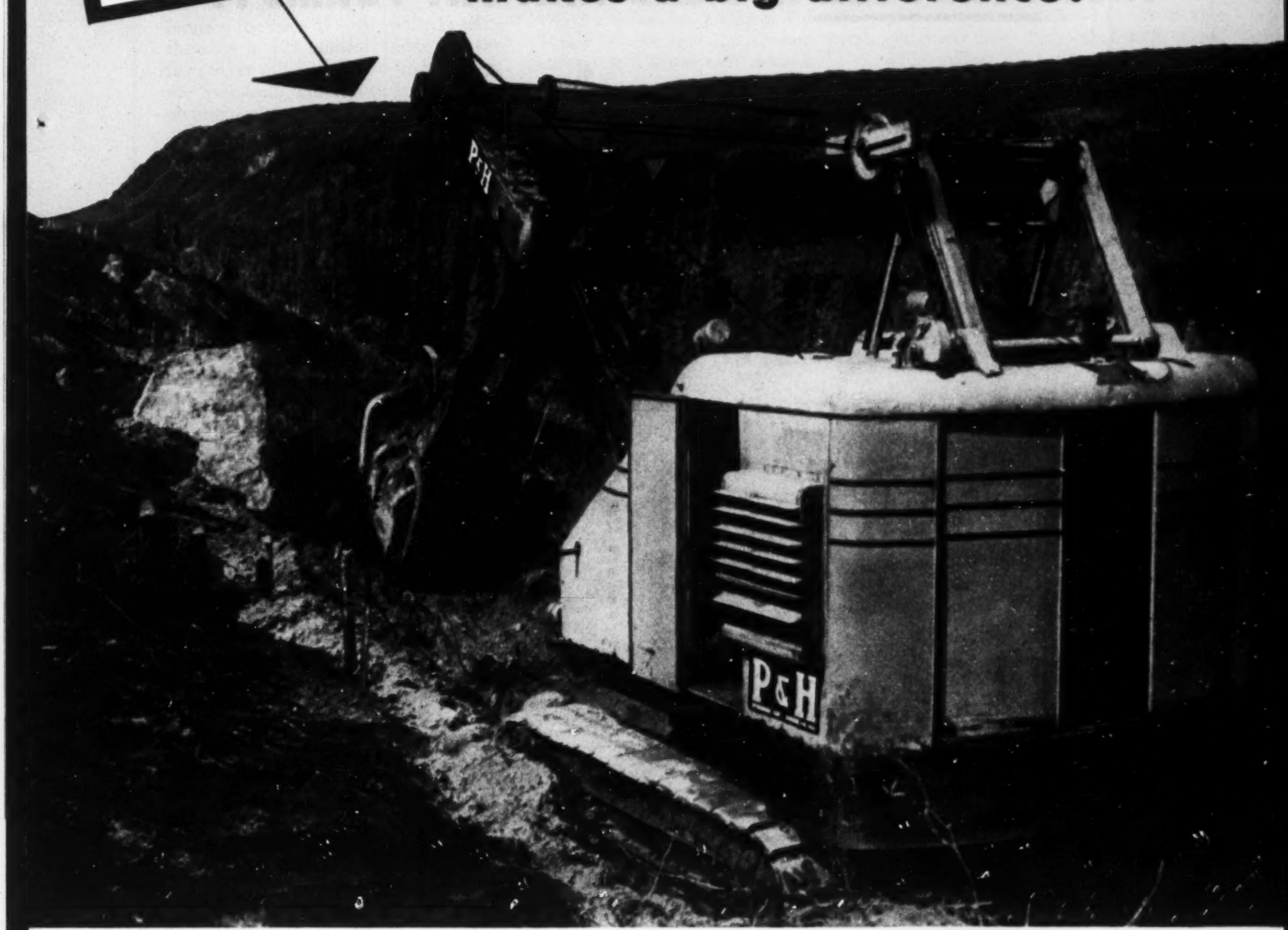

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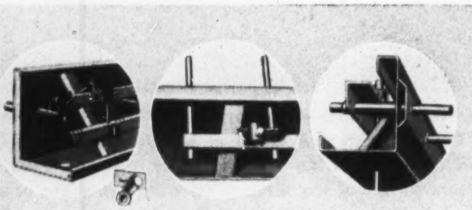

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• **Schuylkill Expressway**—To connect downtown Philadelphia with the present eastern terminus of the Pennsylvania Turnpike, this 17-mi route will cost $80 million. Outside the city limits, work costing $6.2 million was placed under contract in 1952, bringing the value of work on the 11 miles there up to $20 million. Inside the city the project will include two bridges across the Schuylkill. No money has yet been programmed for this section.

• **Penn-Lincoln Parkways**—This east-west thruway for Pittsburgh and vicinity is divided into two portions, Penn-Lincoln Parkway East and Penn-Lincoln Parkway West. A 7-mi stretch of **Parkway East** was fully open in 1952; a 1.1-mi piece was under way. **Parkway West**, 9.2 mi long and leading to the new Pittsburgh airport, went into use during the year. Money has not yet been made available for an expensive 2.3-mi gap that will serve downtown Pittsburgh. Overall project cost is estimated at $100 million, with $40 million already completed or let to contract, and another $4 million pending award.

• **Chesapeake Bay Bridge**—Crossing more than four miles of open water, this $45-million two-lane bridge near Annapolis was opened to traffic July 30, 1952. At first, traffic was triple the advance estimate, and now it is twice. In the first four months revenue was 80% of the first year's estimate.

• **Baltimore-Washington Expressway** — A modern substitute for U. S. Route 1, this limited-access road is a project of the State of Maryland and the U. S. Bureau of Public Roads. Maryland's share, 10.2 mi (plus 8.2 mi of connections) was 95% complete at year-end, with completion scheduled for late winter. The federal share, 17.6 mi, is complete for 10 mi. The remainder is under construction.

• **Annapolis-Washington Expressway** — A 10-mi section, from Parole, near Annapolis, westward to U. S. Route 301, was opened in 1952. A section from Parole eastward, to by-pass Annapolis and connect the Chesapeake Bay Bridge, now is under contract, and the Severn River Bridge, part of this by-pass, will be open in mid-1953, at a cost of $7.1 million. No work has been started between Route 301 and Washington.

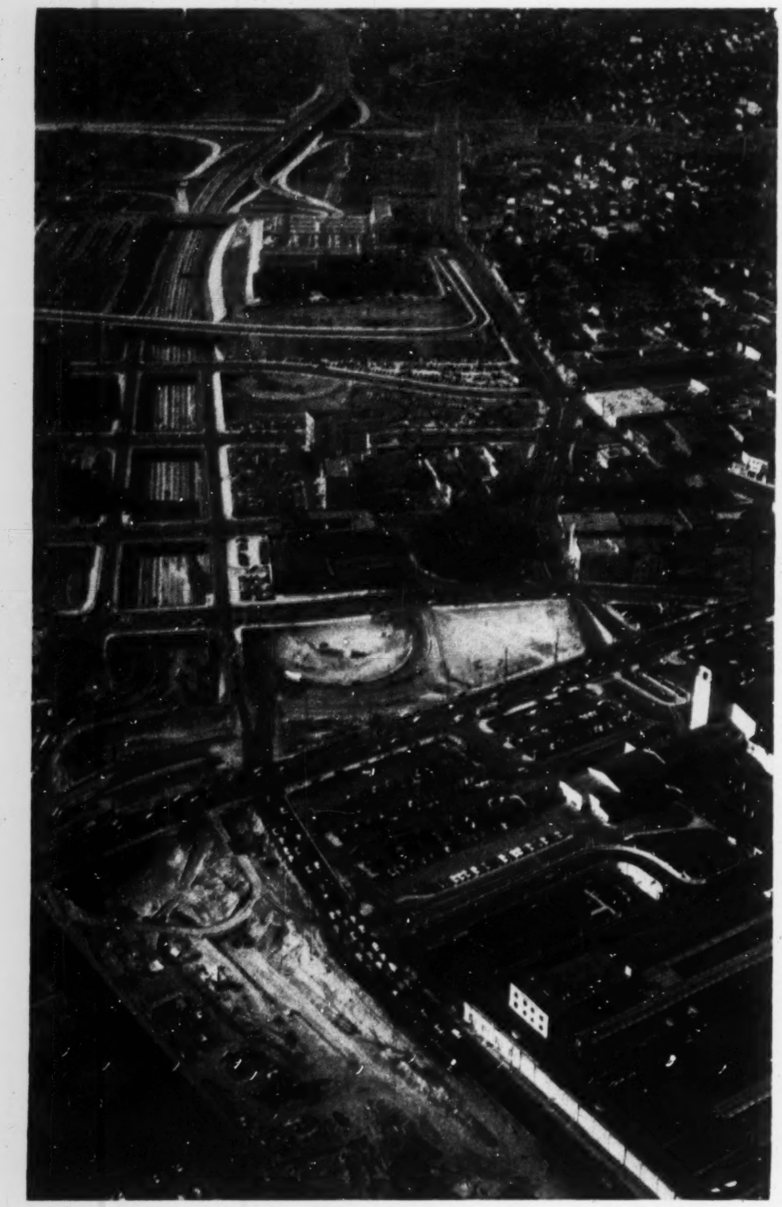
• **West Virginia Turnpike**—Construction of an 88-mi toll turnpike from Charleston, West Va., to Princeton in the southern part of the state was begun late in 1952. Among the early contracts was one for a half-mile long tunnel. It is expected that all grading contracts will be let by May 1, 1953, and the paving contracts by Aug. 1, 1953. Completion in 1954 is scheduled. Two lanes of the projected four-lane highway are to be built initially, except on steep grades, where a third climbing lane will be built. Bonds totaling $96 million were sold last April to finance the work.

• **York River Bridge**—Opened May 7, 1952, this $9-million bridge in Tidewater Virginia features twin 500-ft swing spans that provide a 450-ft wide channel.

• **Norfolk-Portsmouth Bridge and Tunnel**—Another May event was the opening of this link across two branches of the Elizabeth River, connecting two important naval-installation areas of Virginia. The date: May 23. The bridge portion crosses the east branch of Elizabeth River and connects with the tunnel portion (2,117 ft of sunken-tube sections; 2,133 ft of cut-and-cover) under the south branch. Cost: $17.1 million.

• **Savannah River Bridge**—To cross the Savannah River near the downtown sec-

DETROIT EXPRESSWAY—North-south John C. Lodge Expressway reaches toward the downtown area; will be there by 1955. Construction contracts totaling $8.5 million will be awarded this year.



SANTA ANA FREEWAY—Construction in foreground will separate two major thoroughfares where more than 100,000 vehicles now cross at grade daily. Completed sections of Santa Ana, Hollywood and Harbor Freeways (Los Angeles) appear in background.

tion of Savannah, Ga., this toll bridge will have a structure length of 9,776 ft and a main-channel cantilever span of 710 ft. Site work was under way at the end of 1952.

• **Jacksonville bridges**—Part of an expressway system now under construction in Jacksonville, Fla., are Gilmore St. Bridge and John Mathews Bridge, both over St. Johns River. The former, 3,666 ft long, cost $5.3 million and includes a double-leaf bascule span with 174-ft horizontal clearance. It is 30% complete. The latter has just opened at a cost of $11.3 million; length: 7,375 ft.

• **Lower Tampa Bay bridge**—Construction for this 15.1-mi $13.5-million project is 25% complete, with $12.9 million under contract. The largest contract, $7.6 million, includes a 4.2-mi structure containing 17,352 ft of trestle with 48-ft prestressed stringers; its main-channel crossing is a 1,584-ft cantilever bridge. An outstanding feature is an on-shore casting yard where almost 2,200 of the prestressed stringers are being produced. Shorter trestles, under another contract, feature precast deck units; and one of the trestles contains a twin-leaf bascule bridge over an inland waterway. Completion: late 1954.

• **Ohio Turnpike**—Only one contract for construction of a 241-mi toll turnpike across northern Ohio had been let by the end of 1952. It was for the substructure of a twin bridge over the Cuyahoga River. Since the year 1953 opened, the letting of other contracts has begun, and it is expected that all grading and paving will be put under contract during this year. Bonds in the amount of $326 million were sold during 1952 to finance the work. Opening of the first 22-mi section at the eastern end, connecting with the Pennsylvania Turnpike, is scheduled for Jan. 1, 1954, and completion of the entire highway to the Indiana line is set for November, 1954.

• **Ohio freeways**—Completion last year of a 1.9-mi section of the **Willow Freeway in Cleveland**, at a cost of $1.2 million, provides 14 mi of divided freeway from a cloverleaf interchange with State Route 17 on the south side of the city to Broadway, leading to the downtown area. Three contracts totaling $8.1 million for 6.8 mi of the **East Memorial Shoreway in Cleveland** are in progress and 8.6 mi have been completed at a cost $7 million. Two construction contracts totaling $4.7 million—one of which was the 55th Street seawall—were placed under contract last year, and four were completed for $4.8 million.

The $675,000-substructure of a bridge to carry the **Akron expressway** over the Little Cuyahoga River has been completed, and the $1.9-million superstructure will be finished late this year. Two contracts totaling $4.8 million for 3.1 miles of the expressway are under construction, portions of which are open to traffic. **Toledo's expressway** got under way last year with the awarding of a $2.1-million contract for the river piers of a bridge over the Maumee River. Contracts for the remaining substructure work will be awarded this year.

• **Detroit Expressways**—Construction of both the north-south **John C. Lodge** and the east-west **Edsel Ford** expressways was expedited substantially last year by a new method of financing—using funds made available from an $80-million bond issue secured by dedication of necessary future amounts of gasoline and vehicle weight taxes. Prior to last year construction was financed from current funds.

The **John C. Lodge** expressway is 25%

(Continued on page 133)

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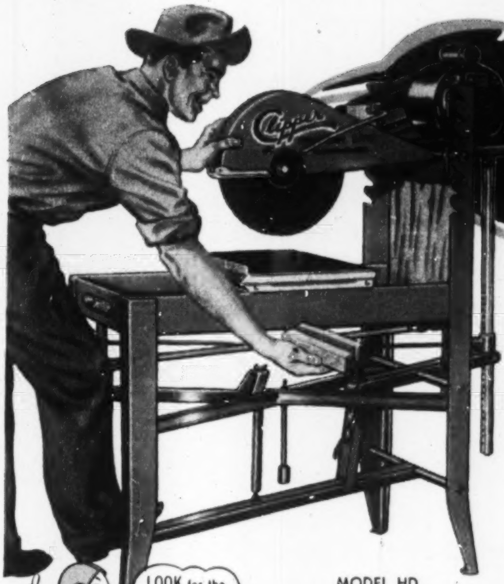

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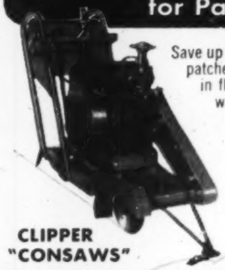

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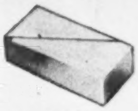
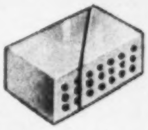
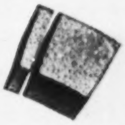


PORCELAIN
Cut in
22 SECONDS



VITREOUS BRICK TILE
Cut in
21 SECONDS

VITRIFIED PIPE
Cut in
18 SECONDS



KILN BLOCK
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21 SECONDS

GLASS BLOCK
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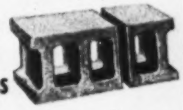
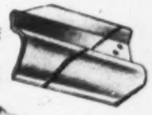
8 SECONDS



CONCRETE BLOCK
Cut in
19 SECONDS

FIRE BRICK
Cut in
4 SECONDS



ROOFING TILE
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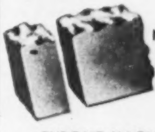
14 SECONDS



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CHROME-MAGNESITE
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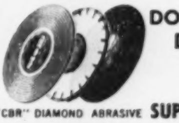

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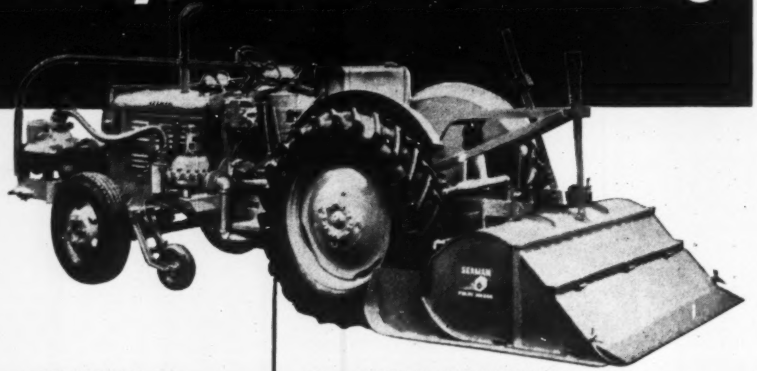
The SEAMAN means more work per day. Longer sections can be processed because it eliminates the need for windrows. The blades are free for other work — another good reason that road men who are behind time on construction and maintenance schedules — "catch-up" fast when a SEAMAN takes over the mixing and finishing job.



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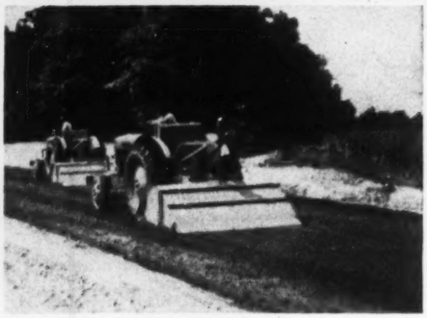

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finished. Section I, extending from West Grand Blvd. south 3.5 mi to Jefferson Ave. is scheduled for completion in 1955. Section II, extending from West Grand Blvd. north 5.5 mi to the James Couzens superhighway at Wyoming Ave., is scheduled for completion in 1957. Rights-of-way purchased to date total $21.3 million, with the remainder to be purchased this year for about $11 million. At present $21-million worth of construction is completed or in progress and $8.5-million worth of work will be placed under contract this year on 26 projects. **Edsel Ford** expressway is 20% finished. Fifteen construction contracts are expected to be awarded this year, costing a total of $12.2 million. About $1.3 million will be spent on right-of-way acquisition. A 2.5-mi section of the expressway is now open. A total of $76 million of federal, state, county and city funds has been spent or obligated on both expressways to date, including $35 million for purchase of rights-of-way.

• **Chicago bridges**—By 1954 Chicago will have two new bridges: The $5.1-million double-leaf twin bascule **West Congress Street** bridge over the south branch of the Chicago River; and the $3.1-million double-leaf trunnion bascule **North Halsted Street** bridge over the north branch of the river. Substructure and superstructure contracts for both bridges were awarded last year, and contracts for the houses and enclosures, and electrical equipment will be awarded this year. A third bascule bridge—the **West Van Buren Street** double-leaf trunnion over the south branch of the Chicago River—will be finished by 1955, at a total cost of $3.3 million. Substructure contract was awarded last year and the superstructure contract will be awarded this year. A substructure contract for a fourth major bridge—the $3.5-million **East 95th Street** double-leaf bascule bridge over Calumet River on the south side of Chicago—will be awarded early this year. Plans also are completed for the $3.1-million **West Harrison Street** double-leaf bascule bridge, but its construction will not be started until the Van Buren Street bridge is nearing completion.

• **Turner Turnpike**—By mid-1952 all paving contracts had been let on the 88-mile Turner Turnpike from Oklahoma City to Tulsa, Okla. Because of delays in getting steel for bridges, the opening date, originally scheduled for December, 1952, has been advanced to April, 1953.

• **Texas expressways**—The Texas State Highway Department completed 31.1 mi of express highway construction last year at a total cost of $8.8 million. This gives the state 65.7 mi of expressways completed to date, as follows: **Houston-Galveston** and within Houston 43.0 mi; **Dallas** and Dallas-North, 10.0 mi; **San Antonio,** 3.5 mi; **Fort Worth,** 3.4 mi and 3.7 mi; **Austin** and Austin-North, 2.1 mi. Dollarwise, most of the work was concentrated on the Houston-Galveston expressway; a total of 26.2 mi having been completed at a cost of $6.2 million. Last year 20 contracts were awarded, covering grading, structures, paving, illumination, and grade separation structures on 24.8 mi of expressways at a total cost of $10.9 million. This year the state highway department will spend about $13.7 million for construction on 9.4 mi of expressways. Major work includes 1.9 mi of construction in **Fort Worth,** to cost about $3.2 million; 1.9 mi in **Houston,** for $4.3 million; 1.0 mi of expressway and a bridge over the Colorado River in **Austin,** to cost a total of $1.4 million; 0.6 mi in **San Antonio,** at $2.0 million; 3.2 mi on the north side of Dallas, for $1.5 million; and a railroad grade separation and an interchange in **Beaumont,** to cost a total of $1.3 million.

• **Granville St. bridge**—First steel is in place on this $16.5-million Vancouver, B. C., bridge with main span of 1,773 ft. It will accommodate an 8-lane highway and is due for completion in 1954.

• **Alaskan Way viaduct**—Work was brought to substantial completion during 1952 on this Seattle project, although cleanup and installation of a lighting system will delay its opening for traffic until mid-March. Contracts totaling $5.1 million on the $10-million project were completed during the year, while work was started on a $2.5-million contract for a vehicular subway, Seattle's first, to connect the north end of the viaduct with the main highway out of the city.

• **Snohomish River Bridge**—A $2-million contract was awarded late in 1952 for a lift bridge across the Snohomish River near Everett, Wash. The bridge will have a 141-ft lift span flanked by two 180-ft truss spans and has in addition two 240-ft truss spans. Approach spans bring the bridge length to nearly 2,500 ft. Completion is scheduled in 1954.

• **Washington Highways**—The Washington State Highway Department in 1952 launched a $65-million construction program to be financed by bonds over a four-year period, in addition to the normal construction program. By mid-summer there had been awarded 37 contracts totalling $14 million under this bond program, which will involve about 120 contracts for widening the Pacific Highway, constructing a four-lane highway at Snoqualmie pass, bridging the Columbia River at Pasco and constructing arterial roads in the Columbia Basin. A $3-million contract for the Columbia River bridge superstructure

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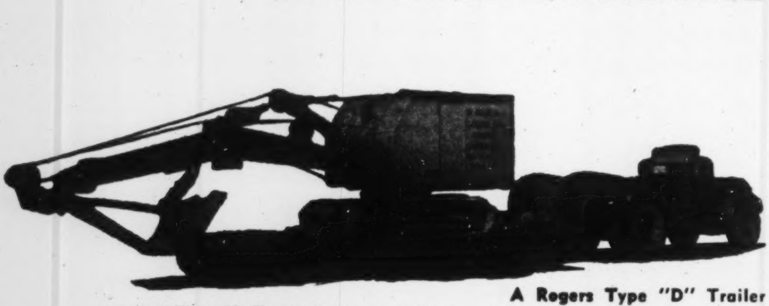

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was awarded in May, with completion scheduled in 1954. The $2-million substructure was completed last year.

• **The Dalles Bridge**—Work on the relocated site of The Dalles Bridge to span the Columbia River got under way late in 1952. The $3.5-million Wasco County, Ore., project was started once but shifts in plans for The Dalles Dam forced a halt with piers standing in mid-stream. Contractors plan to rush the bridge to completion within 15 months.

• **Columbia River Highway**—Undertaken to replace an obsolete section of highway between Cascade Locks and The Dalles built between 1917 and 1922, this 40-mi project is estimated at $16.3 million. Roadbed construction involves heavy rock excavation and some 6,500,000 cu yd of hydraulic dredge embankment. Construction began in 1951. Contracts awarded to date amount to $13.8 million. Expenditures to Dec. 31, 1952, total $8 million. Construction is being financed in major part with state bond funds. Completion is planned for the fall of 1954.

• **T. H. Banfield Expressway**—This four-lane expressway, fourteen miles in length, extends from the heart of Portland, Ore., east to Troutdale. For 5.8 mi, the project parallels the Union Pacific Railroad in a natural depression, locally known as Sullivan Gulch, providing full separation of the expressway from intersecting streets. Costs are estimated: $6.1 million for rights-of-way; $2.6 million for grading; $4.6 million for structures; $2.7 million for paving and $300,000 for landscaping; a total of $16.3 million. The first of the construction contracts was awarded in September, 1951. Expenditures to date: $480,000 for construction and $3.7 million for rights-of-way.

• **Salem, Ore., Bridge**—This $2.8-million project spanning the Willamette River at Salem involves a new two-lane bridge, the reconstruction of an existing two-lane bridge and the building of one-half mile of four-lane highway. Completion is scheduled for late 1953.

• **Portland-Salem Expressway**—A four-lane limited-access highway is being constructed on new location between Portland and Salem, Ore. The highway will be 4.5 mi shorter than existing routes. Cost, exclusive of right-of-way, is estimated at $15 million. Work completed or under contract amounts to $3.25 million. Construction is being financed in part by moneys from state bond issues and in part by federal-aid and current highway revenues.

• **U. S. 99 in Oregon**—A $17-million project considers relocation of all 75 mi of Pacific Highway between the cities of

(*Continued on page 137*)

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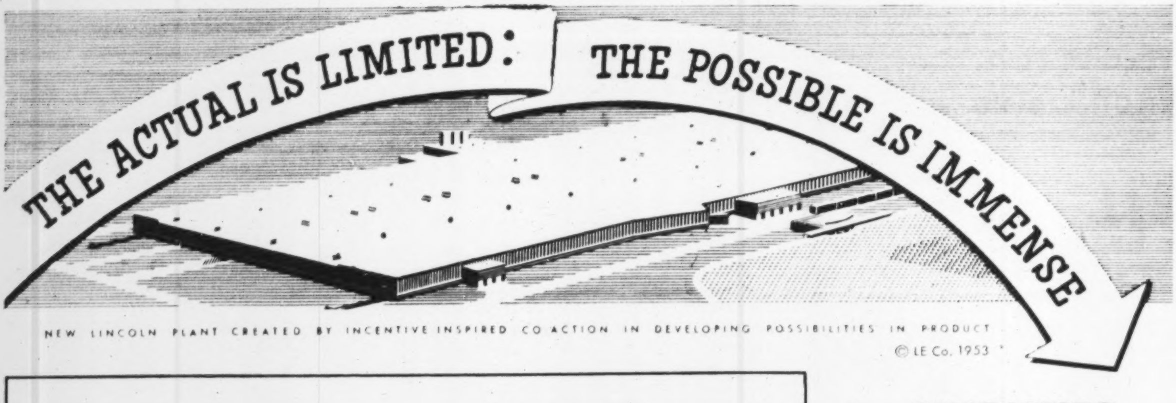
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WELDED DESIGN CUTS WEIGHT AND COST OF 12 TON ORE BRIDGE

By **B. A. ROSE,** Director of Engineering
Heyl & Patterson, Inc., Pittsburgh, Pa.

THE many advantages in lower cost, less steel, ease of maintenance and simpler details have prompted maximum use of welded design on this 12-ton ore and coal handling bridge. The result is a span approximately 50% welded. 28 cross frame sections are prefabricated by shop welding, marking a sharp break with tradition in the design and erection of a structure of this type.

The bridge trusses comprise 16 panels, framed by 17 cross frames, fourteen of which are shop welded manually and at low cost in fixtures to hold alignment. Use of wide flange beams for top and bottom chords, top cross members and some diagonal bracing saves the need for complicated built-up structural sections and improves overall reliability.

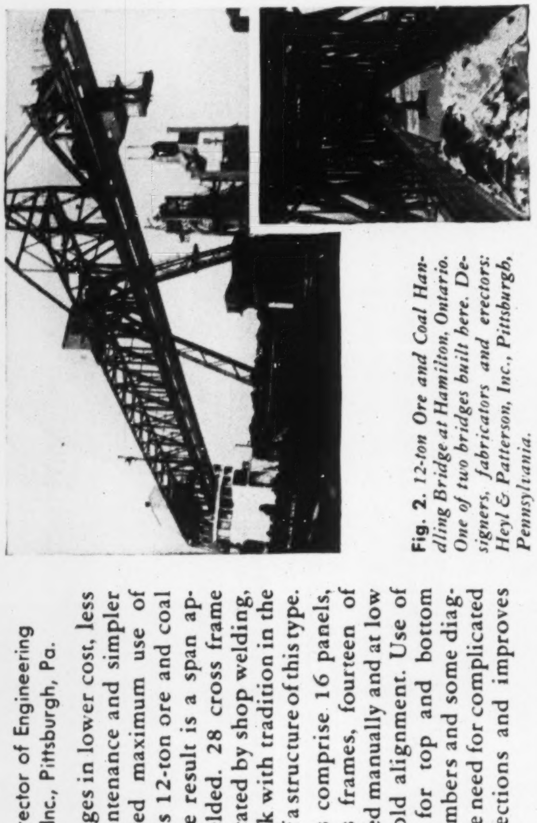

Fig. 2. *12-ton Ore and Coal Handling Bridge at Hamilton, Ontario. One of two bridges built here. Designers, fabricators and erectors: Heyl & Patterson, Inc., Pittsburgh, Pennsylvania.*

SIMPLIFIES DESIGN...CUTS MAINTENANCE

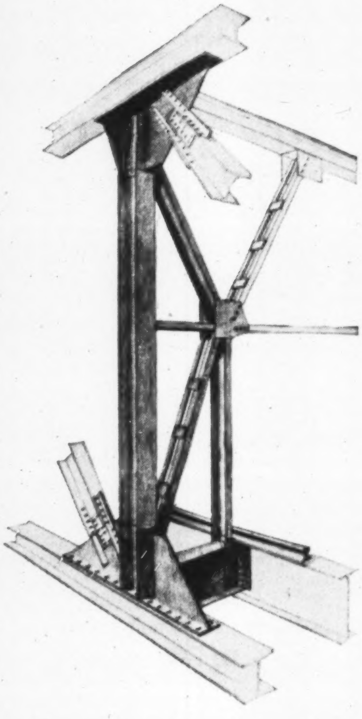

Fig. 1. *Comparison of riveted and welded cross frame connection on coal handling bridge for Dominion Foundries and Steel Ltd., Hamilton, Ontario. Clean design prevents usual accumulation of dust and corrosion . . . helps reduce cost of painting.*

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Eugene and Roseburg. Construction and acquisition of rights-of-way are to be on a controlled access basis with no access from abutting properties and with no crossings of traffic at grade. A saving of 4.3 mi in travel distance is to be effected. Contracts awarded so far total nearly $7 million. Expenditures to date total $3.9 million.

• **U. S. 101 in Oregon**—A $4.3-million relocation to save 3.2 mi in 25 mi and eliminate a great number of sharp curves is under construction on the Oregon Coast Highway between Reedsport and North Bend. One 8.4-mi unit costing $1.2 million worth is being constructed by the U. S. Bureau of Public Roads as a forest highway project. The balance of the work is state highway work financed with state bond money.

All but about $350,000 of the work is under contract. Completion of the project is scheduled for late 1954.

• **Richmond-San Rafael Bridge**—Bids were received late in December for construction phases and revenue bonds of a multiple-span steel cantilever, truss and girder bridge across the north arm of San Francisco Bay. Award has been held up pending appeal on a taxpayer's suit attempting to halt proceedings while an earth fill across the bay is studied. Bonds bid amounted to $62 million. Low substructure bid was $14.2 million; low superstructure bid was $21.1 million.

• **Broadway Tunnel**—San Francisco's $7-million, four-lane vehicular tunnel was completed late in 1952. It will speed downtown traffic to the Golden Gate Bridge and outlying residential areas.

• **Bayshore Freeway**—Major element of this freeway now under contract is an extensive welded steel viaduct in San Francisco's congested industrial district. This unit, the Division Street Interchange, currently has four contracts under way totaling $10.4 million with completion varying from 1% to 75%. Elements of this interchange will connect with the San Francisco-Oakland Bay Bridge. Other work on the Bayshore Freeway both in San Francisco and in San Mateo County to the south brings the total under contract to $13.8 million, representing 4.3 mi of 6- and 8-lane road. An additional $9.6 million is budgeted for early award.

• **Eastshore Freeway**—Work continues on stage development of this freeway between Oakland and San Jose, Calif. Under contract is 13.8 mi costing $8.3 million, and an additional $5 million is budgeted.

• **Southern California Freeways**—Some $65 million for 38 mi of freeways in southern California was under contract at the end of 1952. Completed in 1952 was 13 mi of 6 freeways costing $10 million. An additional $15 million is budgeted.

Work is nearing completion on routes in the most congested areas of downtown Los Angeles so construction emphasis is starting to shift to outlying areas. The close-in freeways fan out from the famous 4-level grade separation with the Hollywood Freeway going west, the Harbor Freeway to the south; the Arroyo Seco Parkway heading north, the Ramona Freeway to the east and the Santa Ana Freeway to the south-east. Contracts in effect on these routes are **Hollywood Freeway,** 2.3 mi, $7.8 million; **Santa Ana Freeway,** 15.2 mi, $22.2 million; **Ramona Freeway,** 6.3 mi, $10.8 million; **Harbor Freeway,** 1.1 miles, $6.4 million; and **Arroyo Seco Parkway,** 0.4 mi, $0.6 million.

Farther out in the Los Angeles area, 3.8 mi of the **Los Angeles River Freeway** near Long Beach is under contract for $5.7 million with 2.5 mi finished in 1952. In Pasadena, 1.5 mi of the **Colorado Freeway** is under construction for $5.4-million.

Down the coast two other freeway jobs are active. The **Oceanside Freeway** has 6.5 mi under construction at a $5.2-million cost with 4.2 mi finished in 1952 at a $1.7-million cost. This route takes traffic through Oceanside, Calif., a congested resort and Marine Corps base town. The **Monterey Freeway** heading south from San Diego to the Mexican border had 3.8 mi completed in 1952 at a $1.3-million.

• **Arroyo Seco Bridge**—This six-lane concrete arch structure carrying the Colorado Freeway across the Arroyo Seco in Pasadena, Calif., was 70% complete at the end of 1952. Cost of the bridge is $3.6 million.

• **Honolulu Highways**—Two arterial highways paralleling the oceanfront are under construction in Honolulu. On one, along the waterfront, a six- and eight-lane portion in mid-town Honolulu was completed in 1952. Construction cost $9 million for 7.5 mi, which roads, combined with older ones, provides a high speed route from Pearl Harbor through Honolulu to Waikiki. The second arterial highway is about a mile inland from the sea. Construction started in August, 1952, with the first 0.6-mi stretch costing $2.2 million, including land acquisition costs. A second 0.4-mi stretch will go under construction this year.

• **Tilo, T. H.**—Completion date for the 40-mi, 24-ft wide Hamakua Coast industrial highway has been moved back to 1955, with the work now about three-fourths complete and total cost estimated at $16.5 million. The 19th of 26 construction contracts was awarded early this year. The route is along a high, gulch-pocked coast in the sugar area with 40 major and several minor bridges required; work is impeded by rains up to 270 in. a year.

(*Continued on page 139*)

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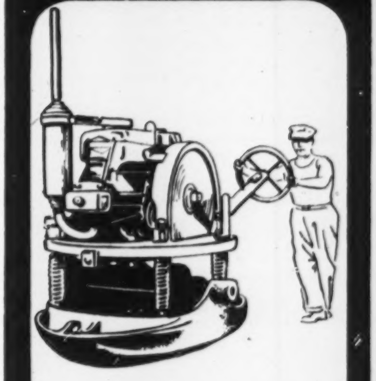

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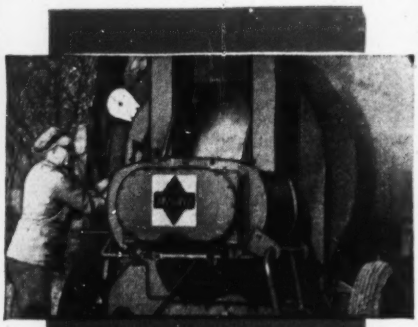

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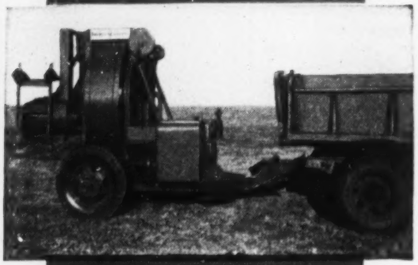

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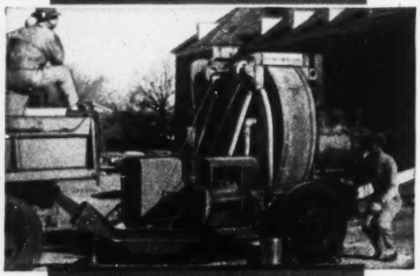

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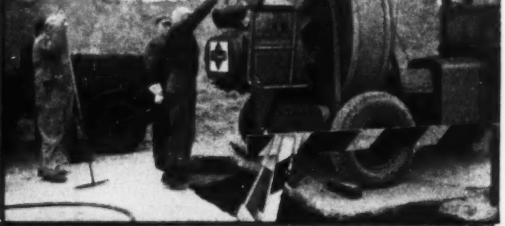

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• **Honolulu Tunnels**—Two tunnel projects are under way to provide faster access routes across the Koolau Mountains which separate Honolulu and its Windward Oahu suburbs. The Nuuanu Valley route is in the approach road stage with one $0.5-million contract near completion and a $1-million job to be let this year. Tunneling will start later.

The second tunnel route is being built about two miles northwest in Kalihi Valley. Work on the first section, a 1.03-mile, 72-ft wide approach road began Dec. 12. Whole project is in five sections, 7.96 miles long, including a single 2,773-ft tunnel bore with a parallel bore carrying two additional lanes to be added later. Funds available include $6 million in bonds and $1.5 million in federal aid. Tunnel construction is scheduled to start in April. Whole project is to be complete by December, 1954.

• **Iron Ore railroad**—Extending northward 360 mi from Seven Islands, Que., (on the St. Lawrence River, 300 mi below Quebec city) to a vast iron ore field, this railroad was 60% graded at the end of the 1952 construction season. Most of the grading has been done with equipment that was air-lifted to flight strips along the route. Track has been laid for 110 miles. Completion expected in 1953.

• **Toronto Subway**—Canada's first subway, 4.5 miles long, was 80% complete at the end of 1952, with operation scheduled to begin early in 1954. Total cost, including $8-million worth of British-made rolling stock (104 cars), will be $48 million. All 2.3 mi of underground work is complete; open-cut work, cross-street bridges, stations, storage yards and shops remain to be finished.

• **New York Subways**—A BMT-IND underground connection at **Queens Plaza**, which was 40% complete at the end of 1951 now is 80% complete. The structure work will cost about $8 million. Although voters (in 1951) amended the state constitution to allow the city to borrow $500 million beyond its debt limit for construction of a **Second Avenue subway**, the New York City Board of Estimate has not yet given the go-ahead signal. The question will not be taken under consideration by the board again until April 9, 1953.

• **Harlem River Bridge**—Foundations for this New York Central Railroad four-track lift bridge were begun in 1951, and by the end of 1952 the bridge was 30% completed. The project is estimated to cost $10 million and will be opened in 1956. It will replace a swing bridge that carries all Grand Central Terminal traffic.

(Continued on page 141)

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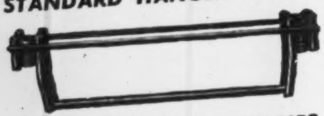

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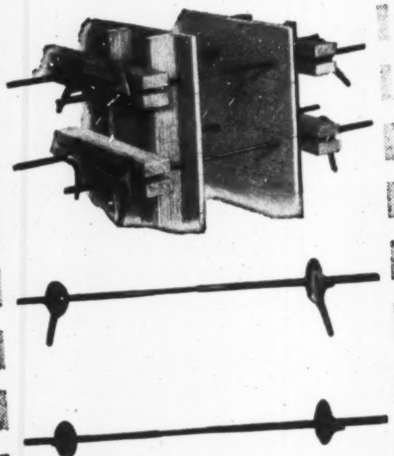

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• **Cleveland railroad bridges**—The first of seven movable bridges to be built over the Cuyahoga River in a critically-needed bridge-replacement program was officially placed in service last month on the W. & L. E. line. A second bridge (C. C. C. & St. L.) will be completed in May of this year, while construction of a third structure (N. Y. C.) was started last fall. It will be completed by June, 1955. Each of these three bridges is a single track, vertical lift, through truss, with a 200-ft horizontal channel clearance. Contracts for the bridge replacements are executed by the railroads on a cost-participating basis with the federal government through the Buffalo District, Corps of Engineers. Cost-participation agreements are expected to be executed this year for the construction of three of the remaining four. They are: A single track, vertical lift, 250-ft horizontal clearance (N. Y. C. & P. R. R.); a double track, vertical lift, 200-ft horizontal clearance (N. Y. C. & St. L.); and a double track, bascule lift, 225-ft horizontal clearance (B. & O.). Total estimated contract costs in which the federal government participates on these six bridges is $19.6 million.

• **B&O Tunnel No. 1**—Eliminating a single-track bottleneck on the main line to Cincinnati, this 0.6-mi double-track tunnel near Clarksburg, W. Va., was opened to traffic June 16, 1952.

• **Pacific Great Eastern Railway**—This British Columbia government line has been extended 82 mi from Quesnel to Prince George after 3 years work at a $14-million cost. A $10-million southern end link between Squamish and North Vancouver is planned and work is started on right-of-way for a $14-million, 46-mile link with the Canadian National Railway between Terrace and Kitimat, scene of the immense aluminum plant. This link is due for completion in 1954.

• **Port of New York Authority Airports**—At Newark Airport, new runway "A" was opened to traffic Nov. 15, 1952. Final cost was $9 million. A new terminal building will go into use in mid-1953, with all construction scheduled for completion in November. Cost estimate is $8.5 million. At New York International Airport, an extension of fuel storage facilities was completed in September, at a cost of $1.4 million. Other construction at this airport during the year included: a permanent control tower, ($1 million); taxiway and lighting work, $3.4 million); and lesser building work.

Hangar No. 6, for National Airlines, was started in July and is scheduled for completion in July, 1953, ($3.1 million). Big projects for 1953 include a permanent terminal building, and hangar No. 7. About $0.7 million was spent on construction at LaGuardia Airport in 1952. Almost all of this was for raising the perimeter dike to a height of 15 ft above the mean low water, including repaving, recrowning and regrading portions of the runway.

• **Air Force construction**—In July, 1952, the Air Force received a $1.2-billion appropriation for worldwide construction of air bases. This brought the total of existing Air Force construction money to a bit over $5 billion. About 85% of this program is carried out by the Air Force through the U. S. Corps of Engineers (Army) and the Bureau of Yards and Docks (Navy); the Air Force itself administers the remainder—largely in the Far East and Europe.

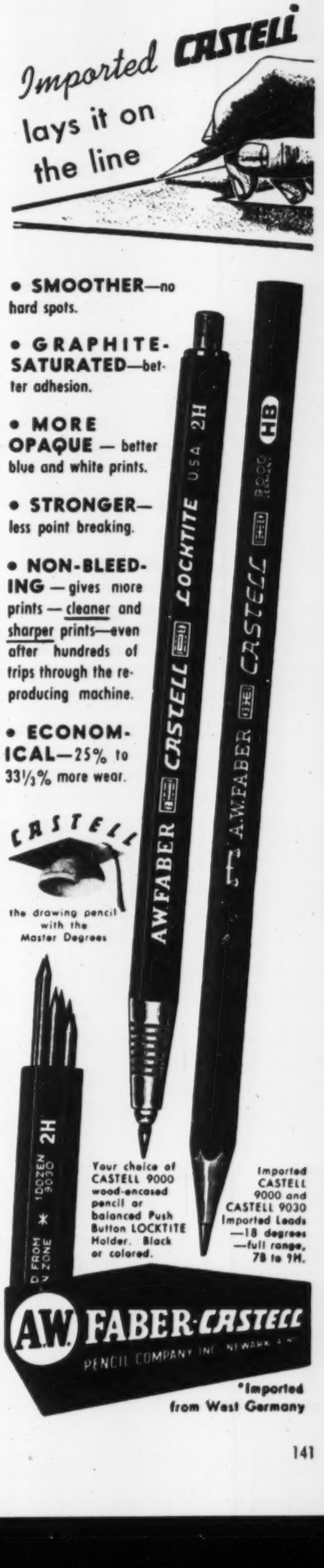
By the end of 1952 about 55% of the Air Force work was under contract. Somewhat more than half is at bases within the United States. The Air Force has pushed design and contract awards, because facilities deficiencies continue to be a major limiting factor in Air Force expansion

Some of the projects currently going into the construction stage are: Portsmouth, N. H.; Plattsburg, N. Y.; Little Rock, Ark.; Clinton, Okla.; Bunker Hill, Ind.; and Abilene, Tex.

• **Naval aviation**—The transformation of Naval Air Stations to jet operations, which began in 1951 with construction of new or longer runways at about 40 stations, included building projects during 1952. In addition to $190 million that was appropriated in January, 1951 for naval air stations in the United States, there is money in the 1952 Public Works budget for facilities for handling both planes and men. Chief among the new construction jobs are new type hangars, for both large and small fields, testing facilities for plane engines, and standard operations buildings and control towers. The Miramar hangar, so named because the first one is being built at that naval air station in California, is scheduled for major stations. Its design allows for partial construction when funds are limited; completion later when more money is available. Shop buildings also were an important part of the 1952 program. Under the 1952 budget of $389 million for continental naval aviation facilities work on additional runways is limited.

In 1953 the trend will continue to be toward structures for support of an expanded air training program at Sherman, Cecil and Pensacola fields in Florida, the Marine Corps Air Station, Cherry Point, N. C., and at Miramar, El Toro and Moffett fields in California.

• **San Francisco Airport**—1952 work on the new air passenger terminal, which will consolidate domestic and overseas service, included finishing the steel framework and pouring concrete for the floors and walls. The facilities will handle 4,000,000 passengers annually. The building is sched-



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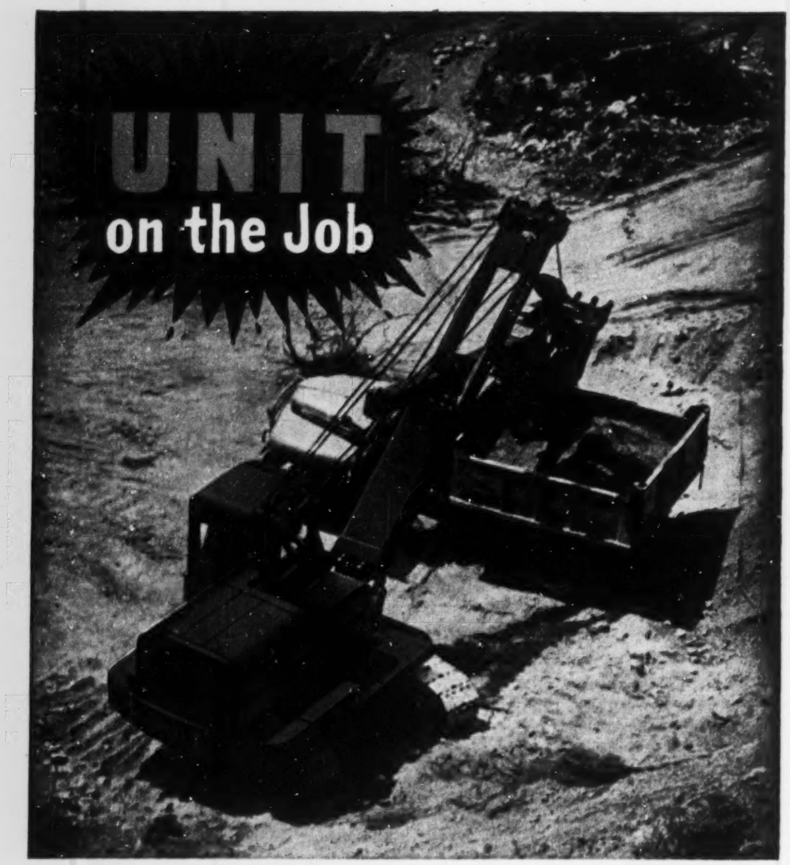

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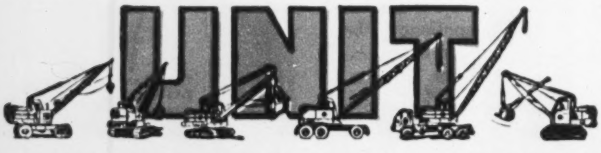

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uled for completion in December, 1953. Total price tag for the terminal area will be $8.5 million.

• **Port of Boston**—Part of a long-range program for improvement of the Boston Harbor, Mystic Pier No. 1 was placed in operation in August, 1952; it cost $5.4 million. The Port of Boston has two other piers under construction, initiated in 1952: East Boston No. 1 and Boston and Albany Pier No. 2, both in East Boston.

Cost of these piers is $7.5 million, and they are scheduled for completion early in 1954.

• **New York Pier 57**—At year's end, the newest New York pier, with its unusual concrete box substructure was three-quarters decked over. A contract for the superstructure had been let for about $4 million. The over-all cost of the pier is estimated at about $10 million and completion is expected early in 1954. The completed pier will have about 470,000 sq ft of usable area: 106,000 on the main deck; 71,500 in the three substructure "boxes" below water level; and a large area on the roof of the two-story superstructure.

• **North Carolina Ports**—New port facilities at Wilmington and Morehead City—the first projects of the North Carolina State Ports Authority—were completed during 1952. A wharf, transit shed and two storage sheds, costing $2.5 million were completed and ready for use at Morehead City in July; a wharf, transit shed and storage shed at Wilmington were completed in October.

• **Georgia port**—Georgia also has a ports authority. It operates the Savannah State Docks and Warehouses, where major construction under way during 1952 included three transit sheds and a wharf. The wharf now is in use and the transit sheds are being completed. Project cost, including railroad and other work, is $5.5 million.

Improved access to the terminal, which is upstream from the city of Savannah, calls for channel enlargement and a turning basin, both of which are awaiting action by Congress.

• **Long Beach, Calif., harbor**—A $1.5-million transit shed was completed in August, 1952, and a $1.7-million cotton warehouse is scheduled for completion in April, 1953. A bridge over the Los Angeles River, on a major harbor approach, was brought almost to completion by year's end at a cost of $1.6 million. A retaining wall for a 50-acre addition to Pier E was completed at a cost of $1.3 million with fill scheduled for sometime during 1953. A temporary bridge was begun as preparation for two new major bridges into the harbor area which will have a total cost of $8 million.

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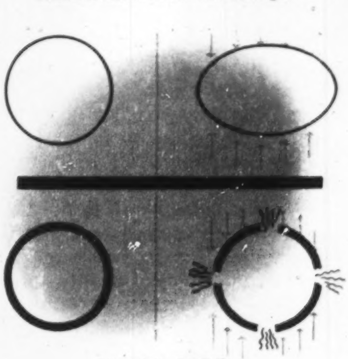

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RONDOUT RESERVOIR FILLS UP as one of the three dams in New York City's present Delaware project nears completion. Limits on future supplies are up to the Supreme Court.

Techniques and trends . . .

Water supply and sanitation

LAST YEAR WAS A BIG ONE, no matter how you measure it, for water supply and sanitation.

In volume of business it fell only slightly short of the 1951 record of $544 million worth of work put under contract. The '52 total was $535 million. Waterworks construction was 11% above '51 at $231 million; sewerage was 9% below '51 at $304 million, a drop attributable at least in part to materials controls.

In advancement of techniques the year was also outstanding, these developments, among others, making news: A circular steel waterworks unit, claimed advantageous in operation as well as cheaper to build; a less costly way to take excess fluorides out of water; the first full-scale application of new phenol destruction knowledge; an aerobic household sewage treatment that will work where septic tanks won't; a bolted steel trench-sheeting unit that paid dollar dividends to its contractor-inventor; a molecular filter that became commercially available; a 7-day process of composting garbage for market; and a "smokeless" incinerator.

In promise for the future, too, 1952 augured well. The voters on Nov. 4 spoke out for approval or authorization of $270 million worth of waterworks and sewerage construction. And throughout the year there came proposals of new work in these same fields.

While $304 million worth of sewage work was let to contract in 1952, $390 million worth of new proposals was added to that still on the drawing boards. Rapidly pyramiding as the year closed, ENR's backlog figures for sewage work reflected $2.76 billion of jobs to come. It would take over nine years to build just these proposed projects, at the 1952 rate of expenditure.

It was a slightly different situation in waterworks, with the backlog growing more slowly—from $1.43 billion to $1.53 billion last year, as contracts let set a record.

- **Water purification**—At the Centennial of Engineering in Chicago last September, the engineer's responsibility in protection of health was called "one of the greatest opportunities the world has seen." And in accepting this challenge, engineers in '52 put much time and effort into problems of pure water—prime requisite to health.

Newest significant tool in the hands of waterworks men is the molecular filter, made available commercially last year for the first time. Laboratories across the country are now availing themselves of the filter and testing its worth. The once-secret membrane, developed for Army use, is a disk on which bacteria can be collected, cultured and shipped, for faster, cheaper water analyses.

A familiarization course was run last spring at the Environmental Health Center of the U.S. Public

COSTLY COFFER-DAM rises out of Lake Michigan as Chicago goes to work on its 950-mgd Central District Filtration Plant. This will have three times the capacity of the Windy City's South District plant, now the world's largest.

Health Service in Cincinnati. And on July 1 there began a one-year period of test-use by a dozen city and state laboratories. The first obvious value of the filter is in the field, where remote water supplies can be filtered and the filter mailed to a small central laboratory for analysis. Practical and economic value of the device for mass-production water analyses of big cities should be determined at the end of the current year's trials. New York City is among the investigators of the new system.

A manufacturer of the filters puts possible savings through their use at $1.50 per water examination; then he multiplies out by three examinations daily at 26,000 laboratories to get a $43-million annual saving. Such money could be well spent on waterworks salaries or for plant maintenance.

• **Fluorides**—Fluorides made news in '52 with a Sept. 30 tally showing 423 communities receiving artificially fluoridated water as a tooth decay preventive from 274 individual waterworks. With increasing numbers of additional communities reporting regularly as adding fluorides to their water, one U. S. city made news last year with a method of fluoride removal. It was Bartlett, Tex., with a water supply having tooth-damaging quantities of fluorides. Bartlett took advantage of a 50% federal subsidy to build the country's first open, contact installation (cheaper than the pressure-contact system similarly built in 1949 for Britton, S. D.).

With the optimum amount of fluorides in water pretty well established at or just above 1 ppm, a very important study of safe limits for other trace elements in water supply was pursued through '52 at Kettering Laboratory of the University of Cincinnati. No results have been reported yet from this study, but the researchers did contribute to the general knowledge and peace of mind last year. They answered a troublesome question as to whether poisoning from trace amounts of cyanide in water could be mistaken for polio. It could not.

• **Purification unit**—A circular steel purification unit, with radial flow out through mixing, coagulation, settling and filtration chambers, had its second and third installations in 1952. And operating data were released on the first plant of the type, after two years' trial in Alexandria, Va. Four, independent 2.25-mgd units for Alexandria cost only $65,000 per mgd to build, and their chemical costs, on water having color combined with manganese and low alkalinity, have averaged $8 per mg.

Purification devices developed for the Army and the Navy commanded attention during the year. Out of the Engineer Research and Development Laboratories at Ft. Belvoir came a truck-mounted, electrical purification unit featuring a high rate conditioner —called an erdlator—in series with diatomite filters. Tests were acclaimed as successful on four varied municipal supplies, with one man operating the

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2,400-gph unit with ease.

For the Navy, research into salt water desalting has evolved a method of continuous electrical dionization using ion exchange membranes. Claims of fresh water from salt water at 10 to 20 cents per 1,000 gal came from the researchers in Cambridge, Mass., as the process was presented last February amidst a haze of uncertainties—uncertain classification of the information, and an uncertain patent situation.

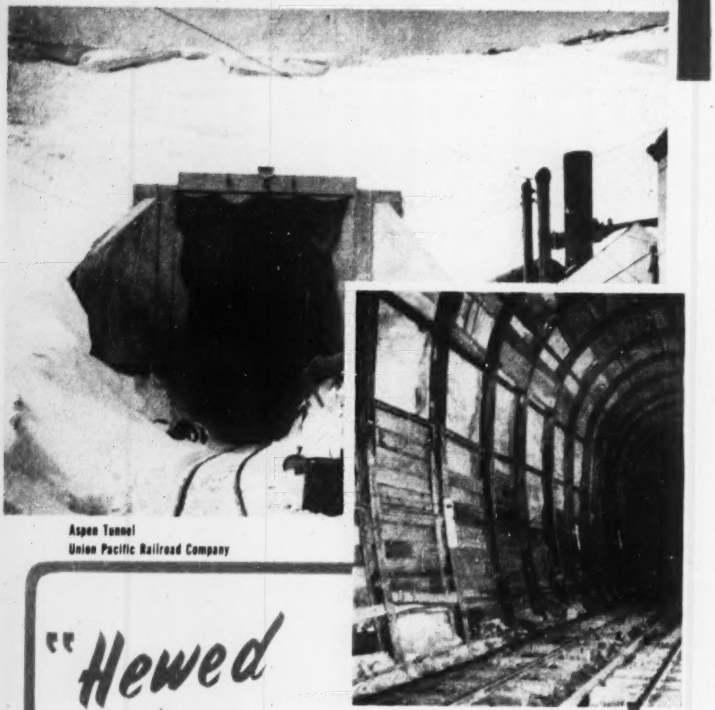
In May, a report on University of California research into desalting sea water placed greatest chances of economical success on solar distillation, collection of condensate on glass covers over evaporation ponds getting heat directly from the sun. This report also noted progress in French plans to get fresh water as a by-product from a seawater temperature-differential power plant proposed for French West Africa.

Later in the year, Prof. W. F. Langelier of the University of California went on record as calling the resinous ion-selective membrane method cheaper both in power consumed and in construction than conventional vapor compression distilling units. However, he predicts a long period of research and development for the method.

• Salt water study—The whole subject of salt water is without doubt due for just such a period of investigation. The Interior Department's Bureau of Reclamation, in fact, has begun it under a law passed last July. The program is chiefly one of encouraging and coordinating efforts of universities, private industries or organizations, and government agencies. The Interior Department laid plans to press for the full $400,000-a-year authorized by Congress for the research, and with considerable chance for success.

• Water supply—Water supplies make news only when they are short. The most critical area of shortage last year was Dallas and nearby Texas cities, victims of a three-year drought. Reserve in Lake Dallas was variously estimated at four to eight months supply as restrictions cut use from 72 to 49 mgd. Old and new wells were put into service. City lakes were tapped. Rejecting rainmaking and a proposed Trinity River tap, the city recently asked consultants for the answer to its emergency water needs.

Rains came as a blessing to several water-short areas during 1952. Arizona and San Diego, Calif., got much-needed relief. New York City's water-



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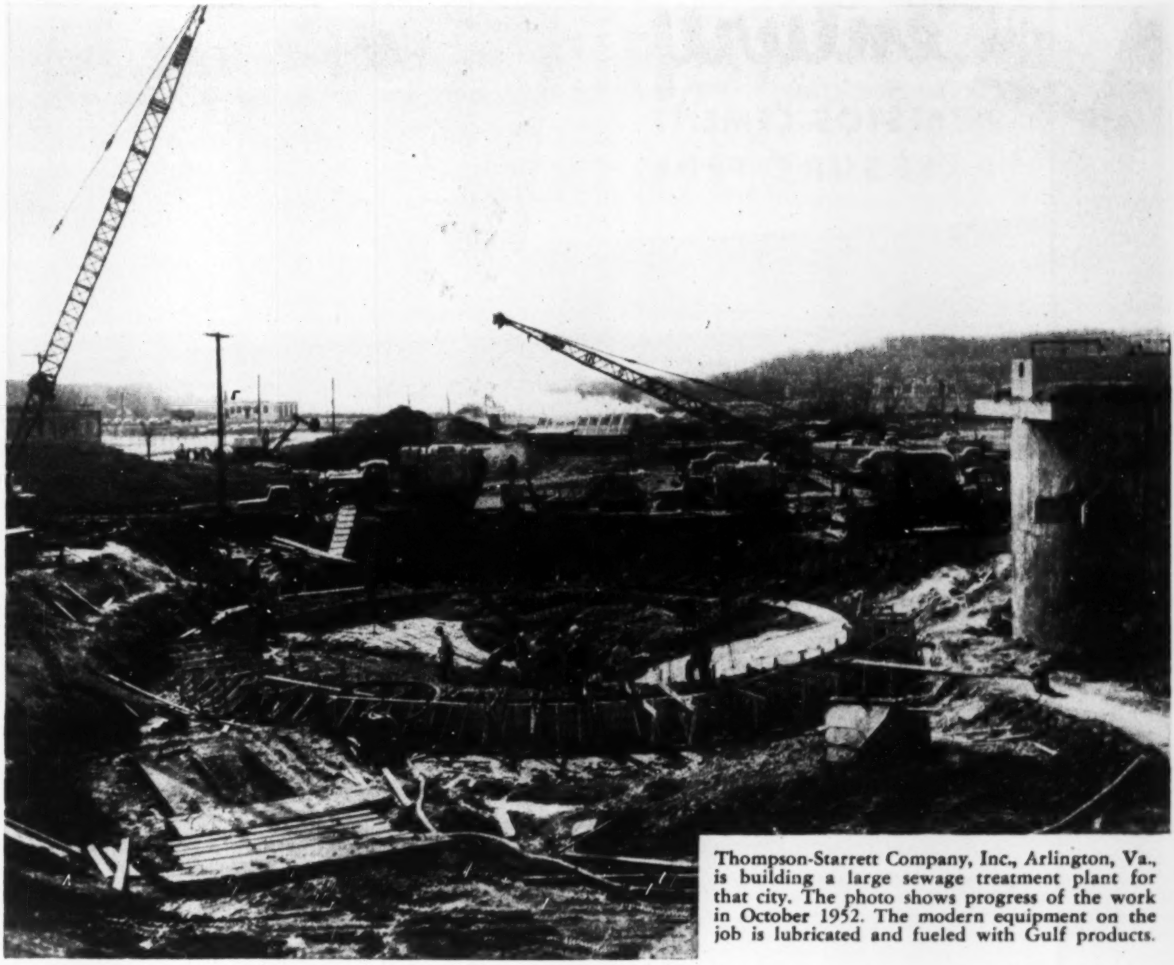

Thompson-Starrett Company, Inc., Arlington, Va., is building a large sewage treatment plant for that city. The photo shows progress of the work in October 1952. The modern equipment on the job is lubricated and fueled with Gulf products.

ON all types of construction projects, Gulf lubricants and fuels play an important part in keeping equipment on the job—and operating efficiently.

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FOR the project pictured here, the authorities of Collierville, Tennessee, selected "Century" pipe because of the same good reasons that have decided so many other communities.

The pattern of decision often goes like this: the authorities concerned investigate suitable kinds of pipe. They quickly note that "Century" asbestos-cement pressure pipe is economical to buy. And, because it is light in weight and easy to handle, its installation is quick and low in cost.

With an eye to the future, they approvingly note that "Century" pipe never tuberculates, has high resistance to soil corrosion, and actually grows stronger as the years go by!

You can see why these low-cost, long-life features appeal to thrifty citizens! There are other important features, of course, and before *you* select pipe for water mains, it will pay you to thoroughly investigate "Century" asbestos-cement pressure pipe.

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shed, and more critically situated northern New Jersey, were blessed with rain to tide them over while stop-gap construction continued. The one completed reservoir of three in New York's present Delaware development poured 250% of its estimated 100-mgd dependable yield into 85-mile Delaware Aqueduct.

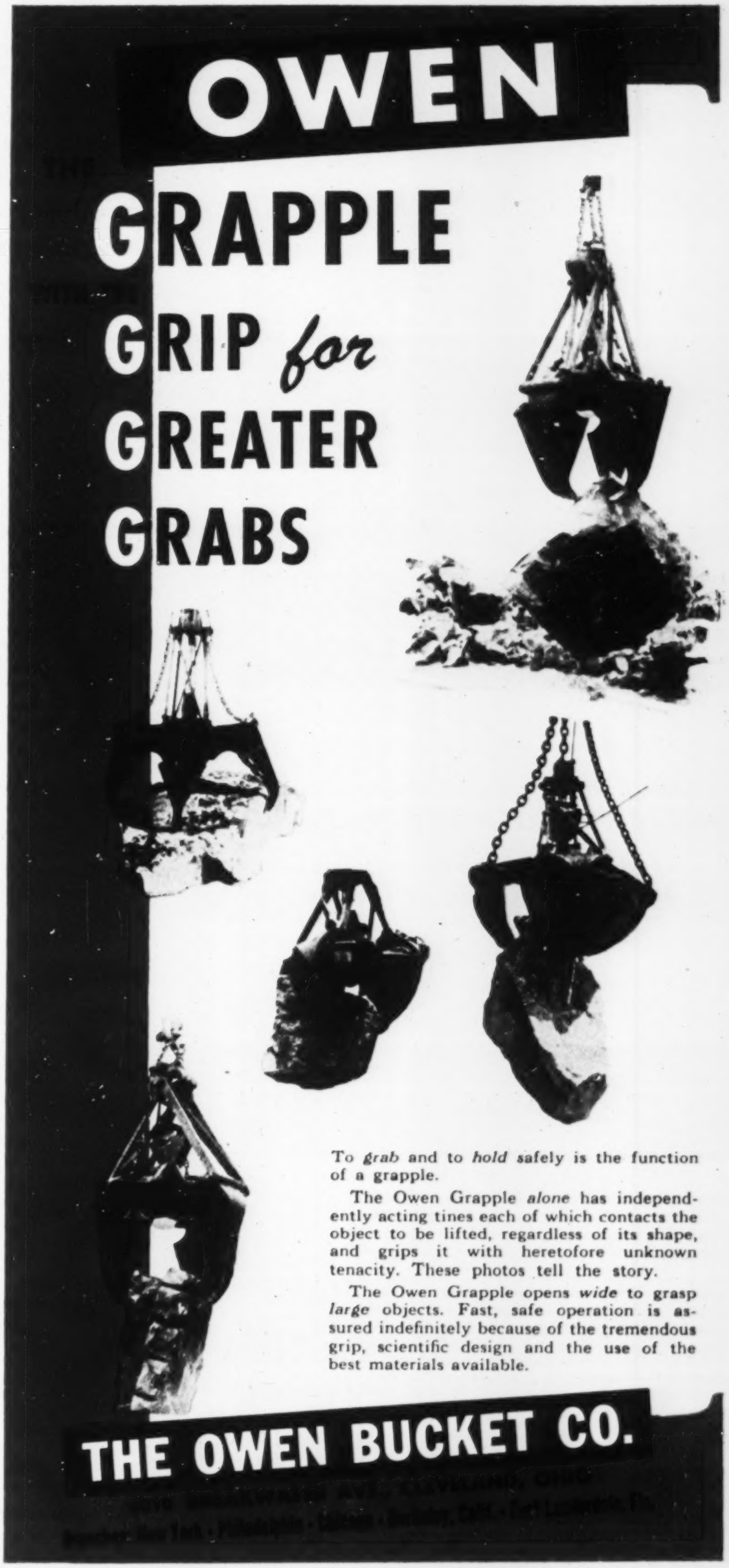
Another 440 mgd are still to come from over the Delaware divide when the other two reservoirs and connecting tunnels now building are completed. But with still more water needed for the future, and proposed Hudson River use squelched for the present, the city in 1952 petitioned the U. S. Supreme Court to reopen the 1931 case that decreed a 440-mgd limit on city diversion from the Delaware. New York now asks that this limit be boosted to 800 mgd so that it can proceed with its planned Cannonsville Reservoir. A master appointed by the court has held preliminary hearings, and the opposition —Pennsylvania—has been heard.

Pennsylvania to date is cast in the role of opposition in an allied water supply project—the Incodel Plan for 4-state development of the Delaware River. New Jersey, Delaware and New York have legislated to instrument by compact this integrated plan, which in its proposed first phase would cost nearly $500 million. Pennsylvania's lawmakers now in session can make or break the plan as now constituted. As these pages went to press word was awaited from a special governor's advisory committee studying Keystone State interests in the plan.

- **Waste disposal**—In the field of waste disposal another Centennial of Engineering pronouncement seemed significent. It predicted: (1) recognition that water supply and waste disposal are a single problem; and that (2) there will be great refinement of principles and methods now in vogue. It was right on both counts, at least up to the present.

Water reclamation from sewage for industrial and agricultural use has received increasing attention. The established deal whereby Bethlehem Steel takes effluent from Baltimore's Back River sewage works was expanded for an increased take last year. And the idea of recharging groundwater basins with such reclaimed water persisted, but without too much actual progress. A main hurdle seems to be public acceptance of the idea. People find it hard to believe treated water from sewage can be used safely for many purposes—despite the fact that they frequently swim in dilute amounts of untreated sewage.

(*Continued on page* 150)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In Los Angeles last year, a 60-mgd activated sludge plant was proposed for a point 25 miles inland—its treated effluent to flow down the Los Angeles River to the ocean. Such an arrangement would have been cheaper than building an extensive collection system to an expansion of the existing Hyperion plant, but the proposal was rejected because of public disapproval of sewage effluent—even though purified—in an open stream.

• **Air in treatment**—Refinement of principles and methods centered last year on new uses of air in sewage treatment. High-rate modifications of the activated sludge process continue to permit greater plant loadings, lower construction costs. Biosorption, among the latest modifications, had its second application last year when built into a food-wastes treatment plant at Chambersburg, Pa. Previously, it had been applied only in the Austin, Tex., sewage plant. It differs from the conventional process by separating the two steps of adsorption and oxidation. Savings in aeration tank size and elimination of presettling are its dollar advantages.

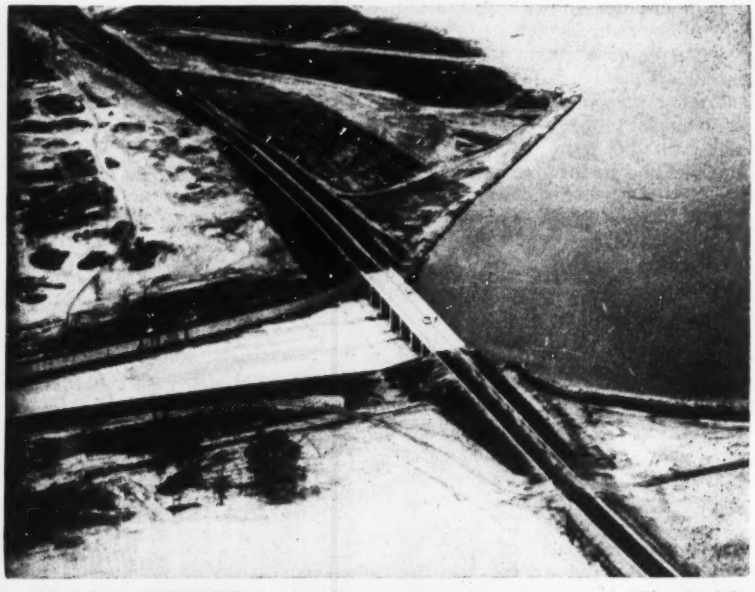
Use of air in floating colloidal solids that won't sink received continued attention last year as dissolved-gas flotation (its worth already proved in industrial waste treatment) was credited with these results on municipal sewage: 69% reduction of suspended solids, 40% of BOD. A plant-scale application was reported being installed in a mid-West city at year's end.

Air injected into recirculated toilet water may be an answer to the household sewage problem in many areas where soils won't permit septic tank-absorption field installations. A process that works on recirculated, aerated water—in effect, a sewerless toilet—evolved last year from research at Purdue University. A laboratory plant had run for 399 days without odors or removal of solids, except those suspended in the effluent. A computed 115 lb of solids fed into the experimental system over this period was reduced by biological action, solution and suspension in the effluent to a mere 20-lb sediment. As a last significant item indicating interest in use of air in sewage: a grant to the University of North Carolina last year permits resumption of research into use of pure oxygen in treatment—the so-called bio-precipitation process.

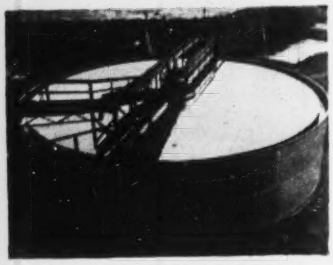
• **Sludge disposal**—Sludge disposal remains a problem of prime magnitude as improvements on existing methods are continuously sought. The Laboon process, for concentrating undigested sludge to 20% solids so that it can be burned directly, without digestion or filtering, was being designed into a $12.5-million treatment for Pittsburgh last year. First-cost saving of the process—through elimination of digestion tanks—was set at $4 million. The design, when completed, will have to move the concentrated sludge efficiently in an odor-proof system.

In Columbus, Ohio, a significant month. It is a system to recirculate

(*Continued on page 153*)



WATER FOR INDUSTRY continued to mount in importance through '52 as Mobile, Ala., completed this 100-mgd supply and Charleston, S. C., advertised its grandiose, billion-gallon-per-day development.



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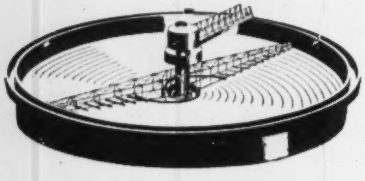

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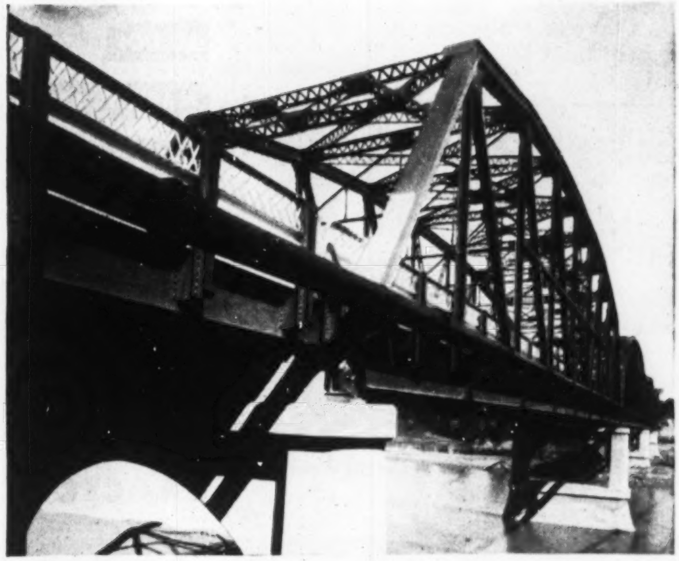
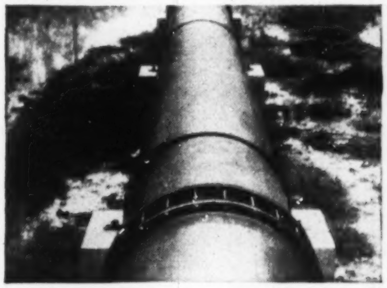
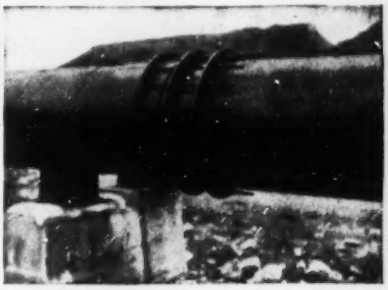


A 16" Dresser-Coupled water line across the Colorado River at Grand Junction, Colorado. Dresser-Coupled to assure Flexible-Tightness despite longitudinal stresses and traffic vibrations that would open a rigid line. Easily installed Dressers have given dependable service here since 1933.



A section of Savannah's new 42" Dresser-Coupled water line crossing swampy ground on concrete pile bents. Flexibility of couplings protects line against stresses.

Another Dresser-Coupled installation in Chicago, Ill. Dressers harmlessly absorb underground stresses beneath city streets where joint failures would be extremely costly.



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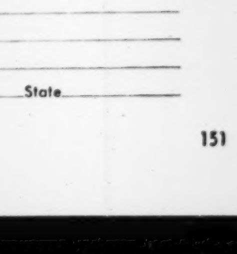

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gases through sludge digestion tanks to effect a drastic cut in the required digestion period. If this attempt to speed up digestion could cut the period in half, it would about halve the necessary size (and cost) of digestion tanks. Columbus officials aren't talking about the test now, nor are the manufacturer-proponents of the idea. They point out success of the method on laboratory scale, but remain reticent on this pilot operation. It is a three-month test.

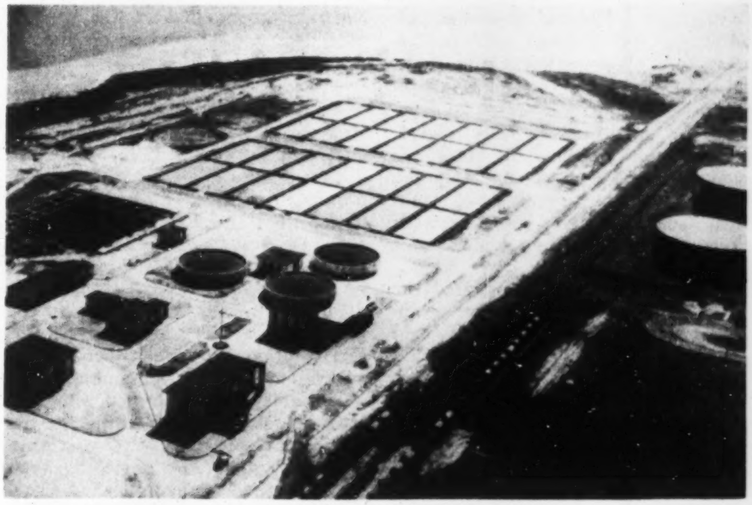
• **Control of gas**—Sewer gas, as a damager of concrete pipe, was defeated last year with installation of plastic lining on 42,000 ft of a California trunk sewer. The top ⅔ to ¾ of the sewer was lined with sheets of vinyl plastic as a protective against deteriorating action of hydrogen sulfide and other gases.

Plastic pipe gained again throughout last year in its acceptance for a variety of waste disposal jobs. Its resistance to corrosive acid wastes makes it a natural for many industrial applications. Research now under way at the University of Michigan is expected to decide its safety and usefulness in the broader fields of water distribution and sewage collection. So far, only the small town of Pax, W. Va., has installed a significant amount of plastic water main.

• **Sewer jobs**—Sewers that made the biggest headlines in 1952 were the scandalously built lines in New York City's Borough of Queens. The whole shoddy mess of faulty construction and faulty inspection was a lesson in human frailty, rather than any useful lesson on sewer construction. One of the year's most outstanding lessons in constructing sewers came from Middletown, Ohio, where a contractor used prefabricated steel sheeting in deep trench work. He figured time saving and greater productivity of his workers safe within the sturdy device saved 50% of the cost of regular wood-sheeting.

A $14.5-million trunk sewer project for Wilmington and New Castle County, Del., was significant as a regional effort at river clean-up as it forged forward to near 50% completion last year. In Northern Kentucky a smaller but equally significant example of successful, cooperative effort bore fruit as Sanitation District No. 1 went to work on a $6.1-million plan to collect and treat sewage from 16 communities. The idea took some selling—but it was sold.

A $30-million trunk sewer project for the polluted Raritan River of New Jersey had an exemplary job of selling behind it, yet wound up last year reduced to a $22.5-million project. Objectors to joining among potential upstream participants aroused public opinion on the ground that their best interests would be served in a separate, cooperative project. Consulting engineers are now looking into what those best interests are and how best they might be served. Meanwhile, the major portion of the Raritan project as orginarily planned seems launched at last and should begin to go to contract this year.



PRIMARY TREATMENT was better than none as Tampa, Fla., bought this plant with $12-million worth of revenue bonds, increasingly favored for sewerage financing.

There is evidence that engineers can (if they will) lead rather than follow public opinion in these educational campaigns that have brought support for expensive, but needed, sewerage. Another case history came from Nashville, where through Chamber of Commerce and newspaper cooperation an overwhelming vote was gotten out last spring for $11 million in revenue bonds for sewage works.

• **Financing**—Revenue bond financing continues to increase in popularity and use as a fund-raising device for sewage works construction. And increased thought goes into the system of charges by which revenues are to be collected from users. An outstanding schedule of such charges was that figured for Middlesex County Sewerage Authority (of the Raritan River project mentioned above). The authority's rates are to be based on flow, BOD, suspended solids and chlorine demand of the individual municipal and industrial wastes to be disposed of by the authority. The only factor found troublesome is chlorine demand, a measure of pollution seriously questioned for its applicability to industrial wastes by experts in the industrial wastes field. Chlorine demand is in for some serious reinvestigation as a yardstick of treatment required—and therefore, of treatment cost.

• **Pollution abatement**—Pressure was increasingly on for abatement of water pollution last year. Pennsylvania, long in the forefront with its state clean streams program, turned to the courts for the first time to force action by two municipalities. Industries had been brought to court before. The cities named in suits filed as the year ended were the only two cases calling for legal action out of 37 communities ordered to act on pollution last year. At year-end, a total of $200 million reportedly had been spent postwar in Pennsylvania on pollution abatement. This total has been divided about equally between cities and industries.

Ohio, just beginning its real drive for river clean-up under a law that became operative in 1952, sees $300-million worth of sewage works and $200-million worth of industrial wastes plant in its future. Claiming a policy of "cooperation, not litigation; persuasion, not prosecution," the newly-formed Water Pollution Control Board is issuing limited permits for the discharging of wastes to cities and industries, as it builds a groundwork of investigation and information.

In the Ohio Valley as a whole, installation of sewage treatment works was at last catching up with population growth in 1952, according to the fourth annual report of Orsanco, the 8-state Ohio River Valley Water Sanitation Commission. Word of a still further stabilized situation came in '52 from an older pollution abatement group, the Interstate Sanitation Commission of New York, New Jersey and

Connecticut. The end of sewage pollution in the tri-state metropolitan area is said to be in view. Commission activities are now directed toward inventory of industrial wastes, and revamp of inadequate sewage plants. Modification of standards, upwards, is now an admitted possibility in the ISC area. And on the subject of standards nationally, the trend toward stream standards rather than effluent standards continues.

In the big, national picture, the U. S. Public Health Service completed its monumental set of 15 basin reports last year. These reports on sources of water pollution add up to a dismaying 22,000 individual cases—11,800 municipal and 10,400 industrial. The need is set at 6,600 municipal plants, 33,500 industrial plants; total cost, $9 to $12 billion. A major worry of PHS now is how to detect and measure progress in the drive to meet this need—especially on the industrial front.

- **Refuse disposal**—Composting took the spotlight during 1952 as a plant on each coast of the U. S. began producing commercial fertilizer from municipal garbage. Each is a private enterprise. The East Coast plant is the first full-scale application of a completely enclosed 7-day process. It is at Bay Shore, Long Island, where 10 tons daily can be produced to sell for a price of $68 a ton. The aerobic fermentation process is operable the year around in a sort of timber silo in which it is fed controlled air. The bacteriological working within the silo requires no seeding other than a recirculation through the process of 10% of its finished product.

The West Coast plant, producing earlier in the year, has a 70-ton daily output of compost made in a 21-day open-air process. Sorted garbage is mixed with soil and manure, then sprayed with a bacteria isolated for the purpose. It is ground and spread in rows that are turned once in the composting period. Then it is dehydrated and pelletized to sell for $34 a ton. At year-end, the plant was shut down for mechanical redesign toward more efficient materials handling. Operations are to be resumed.

Incineration made a strong play for continued prominence as a refuse disposal method last year as a new plant embodying the latest design fired up in Hempstead, N. Y. It has short induced-draft stacks rather than a towering chimney, smoke control equipment to overcome a chief objection to incinerators, and a pleasing façade to meet another.

Some major developments in water supply and sanitation

- **Baltimore, Md.**—Liberty Dam on Patapsco River is now 60% completed under a $5-million contract. This 160-ft high, 704-ft long gravity concrete structure is supposed to be finished in November of this year. Next month the city plans to advertise for bids on construction of 120-mgd Ashburton Filtration Plant, estimated to cost $11 million.

- **Boston (water)**—The construction division of Massachusetts' Metropolitan District Commission has as its largest waterworks job now under way an 8-mi, 48-in. steel pipeline to Blue Hills Reservoir, which was completed in 1951. Cost of the line will be about $1.8 million. This year, a $16-million, 7-mi length of 10-ft (finished diameter) tunnel will be put under contract. This tunnel will extend from the completed City Tunnel to a 370-ft deep shaft which was completed last year.

- **Boston (sewage)**—Tunnels also highlight sewerage projects the MDC has in progress. Last year saw 4 mi of deep-rock tunneling from Chelsea to Dear Island advanced to about 6% completion. It is a 10-ft (lined) bore to cost $6.3 million. This year work will start on a $15-million, 7½-mi deep-rock tunnel—Ward Street to Columbia Circle to Deer Island. Five miles of this will have an 11-ft finished diameter; the rest, 10-ft. Also to be begun in '53 are 8½ mi of conduit varying from 54-in. to 12½x8-ft; together with an overflow and detention station this project will cost $7½ million. Alewife Brook Pumping Station was finished last year; it is a completely automatic installation.

- **Bristol, Va.-Tenn.**—A $3.5-million pollution abatement project begun in 1950 neared completion at year's end. Its sewage treatment plant was to have been ready for operation in January. Some 65 mi of sewers were included in this project.

- **Canton, Ohio**—A $3.1-million sewage-garbage disposal plant neared completion at year-end. This 30-mgd activated sludge plant has digester capacity for the city's garbage, which is trucked to grinders, then conveyed to digesters. The plant has been designed to serve 170,000 people.

- **Chicago (sewage)**—Nearly $20-million worth of sewer construction and allied work was completed last year by Chicago's Sanitary District and Department of Public Works. In round numbers, the Sanitary District completed $7.5-million worth of intercepting sewers; $4.1 million of additions to its treatment works; and $2.2 million on modernization and rehabilitation of four sewage pumping stations. This year the Sanitary District has budgeted $16 million for construction.

During 1952 Chicago's Department of Public Works spent $5.4 million for 27,400 ft of large, monolithic reinforced concrete sewers, ranging in size from 8½x9½ ft to 13½x15 ft. This year the department expects to award about $9-million worth of contracts for additional large sewers. The work includes: 22,700 ft of single-barrel, monolithic concrete, varying from 9x10-ft to 15½x15½ ft; 5,400 ft of 13x10-ft and 14x8-ft double-barrel, and 9,700 ft of 72-in. and 96-in. concrete pipe.

- **Chicago (water)**—Last year the Department of Public Works constructed $1.4-million worth of water feeder mains. It included 10,500 ft of 48-in., 9,000 ft of 36-in., and 2,700 ft of 30-in. (steel cylinder concrete pipe), and 720 ft of 36-in. cast-iron pipe. This year's program calls for the construction of 30,740 ft of 24, 36, and 48-in. feeder mains at an estimated cost of $1.6 million. The department also awarded contracts last year for $1.7-million worth of improvements and expansion of its Western Avenue water pumping station, including four 650-hp boilers.

A $6.6-million contract was awarded last year for construction of a coffer-dam to enclose a 61-acre site for Chicago's $85-million, 950-mgd Central District Filtration Plant, to be built just north of Navy Pier in Lake Michigan. By the year's end, $1.7-million worth of work had been completed on the coffer-dam.

Tunnel contracts for the project may be awarded this year, pending the outcome of a lawsuit filed by adjacent property owners over the location of the plant.

- **Cincinnati, Ohio**—The $5-million Little Miami Sewage Treatment Plant was 75% finished at the end of 1952, and the entire system will be in operation by the latter part of this year. Contracts awarded last year on this project include the Mt. Washington sewer, $235,000; the Delta Avenue pumping station, some interceptors,

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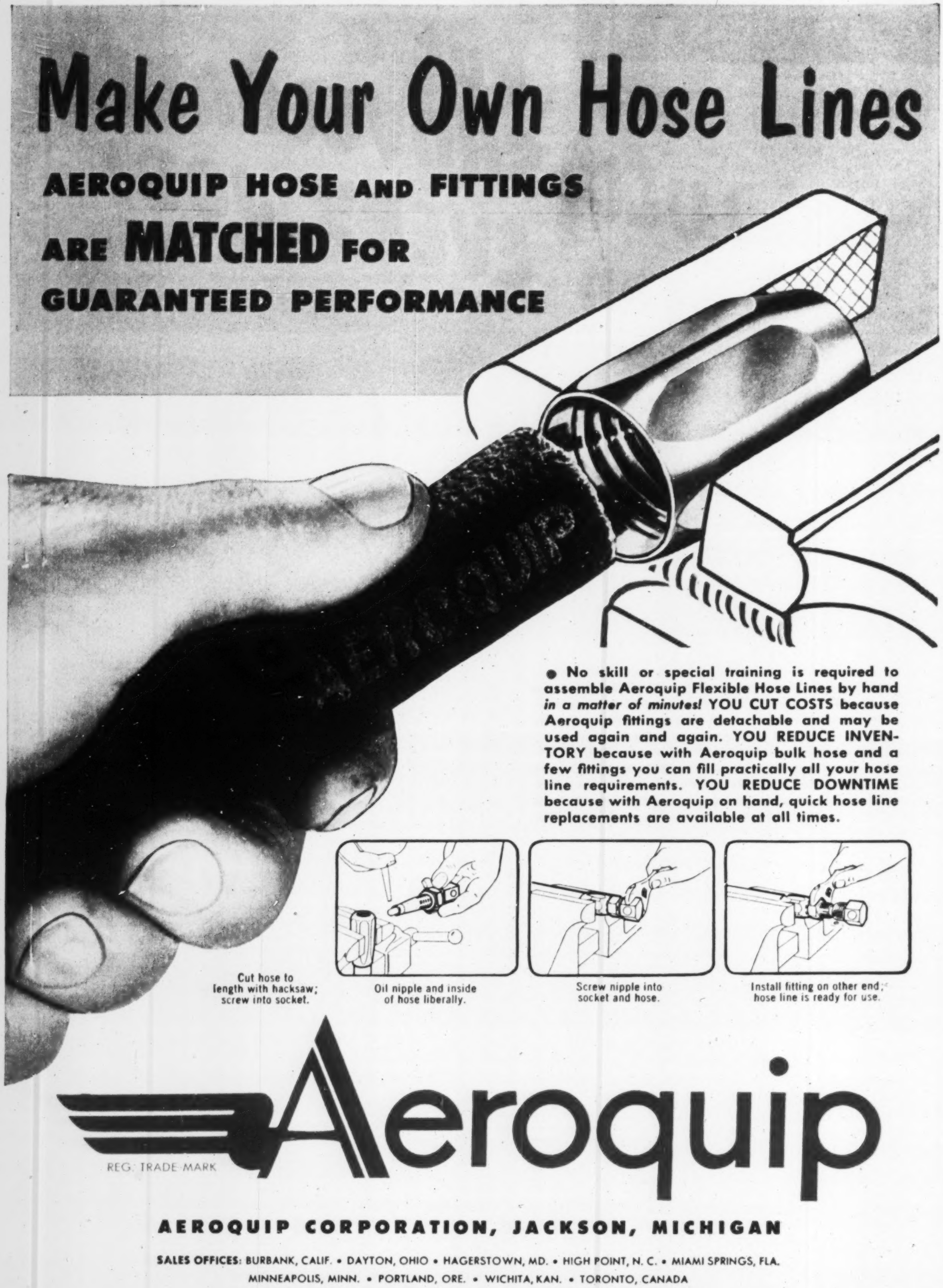

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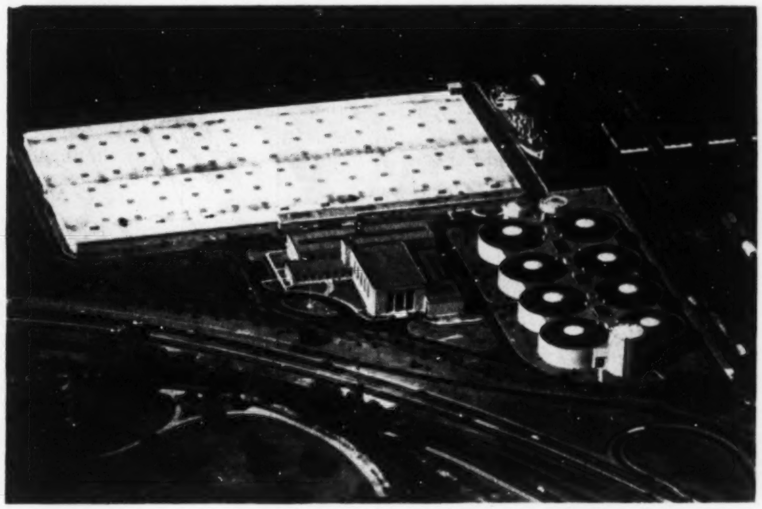

FAR FROM AN EYESORE, the attractively laid Owls Head sewage treatment plant went to work for New York City under covered aeration tanks last year. Tanker takes digested sludge to sea.

and the Duck Creek regulator, $445,000. Considerable planning is now under way for the disposal of sewage from the Mill Creek area, which is larger and more densely populated than the Little Miami area. A $1.9-million contract was awarded last December for the 10-ft dia Mill Creek outfall and diversion sewer, and the 3-ft west branch of the Ohio River interceptor. This two-year contract includes two concrete hydraulic control chambers; the larger one being 34 ft in dia and 78-ft deep. Site preparation and foundation exploration for the proposed Mill Creek sewage treatment plant probably will be started this year.

• **Denver, Colo.**—The Board of Water Commissioners will let about $9.5-million worth of construction contracts this year in its $16-million water improvement program. The work will involve, chiefly, additional construction on the $11-million, 340-ft high gravity concrete Dam No. 22 which will store 42,000 acre-ft of water; enlargement of the Moffat filtration plant from 75 mgd to 135 mgd; and the construction of new service and feeder mains. Last year, eight construction contracts were completed at a total cost of $2 million, while five contracts totaling $1.8 million are currently under way.

• **Detroit (sewage)**—Contracts for sewer construction awarded last year by the Department of Public Works totaled $8.8 million, for 3.6 mi of 10-ft dia tunnel, 1.25 mi of 16-ft dia tunnel and 10 mi of minor sewers. A $1.25-million contract also was let last year for substructure of the Freud sewage pumping station. This year the department plans on awarding contracts for construction of the superstructure of the Freud pumping station to cost about $500,000, and for $1 million worth of additional sewage pumps. About $14.5 million worth of sewer construction is expected to be placed under contract this year. It will include 1 mi of 15.5-ft dia tunnel, 4.6 mi of 16-ft tunnel, 1 mi of 11-ft tunnel, about 1,300 ft of double 10x10.5-ft reinforced concrete box in open cut, 1.6 mi of 4 to 6.5-ft dia tunnels and 10 mi of minor tunnels.

• **Detroit (water)**—Last year witnessed substantial advancement, constructionwise, of Detroit's 200-mgd Northeast water treatment plant. Five contracts totaling $1.7 million were completed in 1952; nine contracts totaling $4.8 million were awarded last year; and 12 contracts are expected to be awarded this year at a total cost of $15.5 million. Work placed under contract last year included two booster stations, each with a 10-mg underground reservoir and 30,200 ft of 36 to 54-in. steel-cylinder-reinforced concrete pressure pipe. The city's water department completed the substructure for a low-lift pumping station last year, plus 18,200 ft of pressure mains. Construction to be started this year includes: the chemical building; low-lift plant superstructure; filter building, office building, and switch house; valves, transformers and switchgear;

(Continued on page 158)

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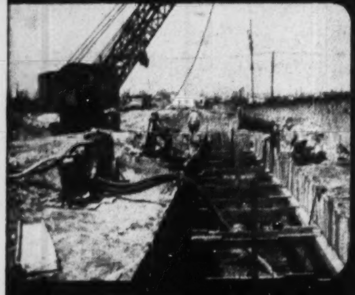
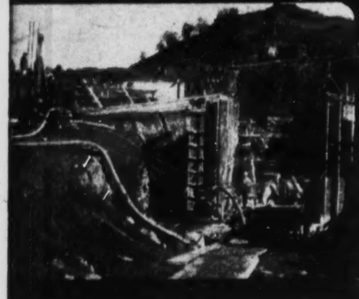

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• **Hempstead, N. Y.**—Completion of a $2.5-million construction project put an outstanding new refuse incinerator into operation last year. This 700-ton per day plant is chimney-less and features near-complete smoke control, steam-power generation, and attractive appearance. Its short, induced draft stacks have cyclonic fly-ash collectors that catch 90% of particles 15 microns and larger.

• **Honolulu, T. H.**—The City-County of Honolulu has completed 60 projects in its 10-year, $22-million sewer construction program started in 1948. Cost so far is $9.5 million. Work in 1953 will include completion of 14 contracts now under construction (cost, $2.8 million) and the award of 11 more contracts estimated to cost $3.3 million.

• **Kansas City, Mo.**—A new intake and pumping station—$2-million worth of an eventual $11.7-million, expansion of the North Kansas City plant—is in the bidding stage right now. The intake-and-pumping structure will be flood-protected to a point 12 ft higher than the present river pumping plant. Modifications to the present North Kansas City plant are intended to bring its 120-mgd capacity to 135 mgd by summer. New work to be started this year is to bring the plant's capacity to an ultimate 210 mgd by mid-1954. A $16-million bond issue was voted in November to cover this and other waterworks improvements, including some existing pumping station flood-proofing.

• **Lake City, Wash.**—Work costing about $1.5 million was carried out during 1952 in the Lake City Sewer District just north of Seattle, Wash. It included a treatment plant, lift stations, interceptor, and a tunnel which is scheduled for completion in May. The 1953 program calls for construction of laterals costing an estimated $1.5 million.

• **Los Angeles (sewage)**—The $43-million Hyperion sewage treatment plant was officially completed when its final unit was accepted last August. The 245-mgd, high-rate activated sludge plant was begun in 1947 and put into partial operation in mid-1950.

• **Los Angeles (water)**—An 85-mg reservoir in Eagle Rock was 80% complete at the end of 1952. Cost will be

(*Continued on page 160*)

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$1.4 million, but construction of the Eagle Rock-Hollywood conduit that will tie the new storage into the water system will bring the total cost to $8 million. First unit of the conduit, 11,890 ft, was completed in October; and construction of the 24,150-ft second unit will be complete by mid-1953. Pipe diameters ranged from 24 to 68 in. Completion of reservoir and conduit will make 171 mgd of Colorado River water available.

A new reservoir in Stone Canyon, construction of which is 40% done, will have a capacity of 162 mg and, with appurtenant pipeline, will cost an estimated $2.5 million. It was started in 1951.

In the Sunland-Tujunga area where the department had acquired 31,300 customers from a private water company in 1951, an improvement program was undertaken which will cost over $3 million.

Included in this program is a 32-mg reservoir which was 60% complete at the end of 1952.

A six-mi 66 and 60-in. pipeline running from Silver Lake Reservoir to distribution mains at Figueroa St. and 43rd Place was completed in mid-year at a cost of $2.5 million.

• **Miami, Fla. (water)**—The first phase of a 100-mgd softening and filtration plant is 25% completed; it is Southwest Treatment Plant, being built for a present capacity of 40 mgd at a cost of $2.5 million. Its well-field source of supply is about 10% finished and will cost $100,000. Construction of 45,000 ft of supply and feeder mains—48 and 30-in.—will begin this year. Prestressed concrete cylinder pipe for the $2-million project is already in process of manufacture.

• **Miami (sewage)**—The year 1953 will see Miami's big $27-million sewage project under construction. Contracts are just being let on intercepting sewers and force mains estimated to cost $6.9 million; sewage pumping stations, $3.8 million; Biscayne Bay forcemain, $3.2 million; sewage treatment plant, $11 million; Virginia Key outfall, $1.8 million.

• **Mobile, Ala.**—The Big Creek water supply—a 100-mgd yield from behind a mile-long earth dam—was finished in '52 at a cost of $7 million. The water is pumped through 10 mi of 60-in. and six miles of 48-in. reinforced concrete pipe.

• **New York (sewage)**—During 1952 three new sewage treatment works were placed in operation in the city's program to remove pollution from

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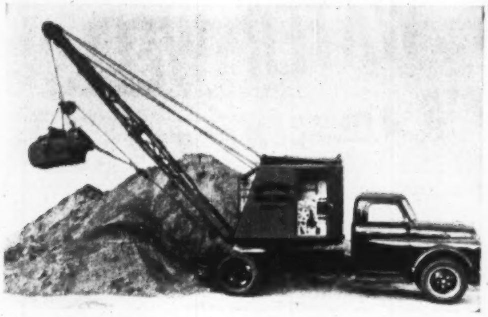

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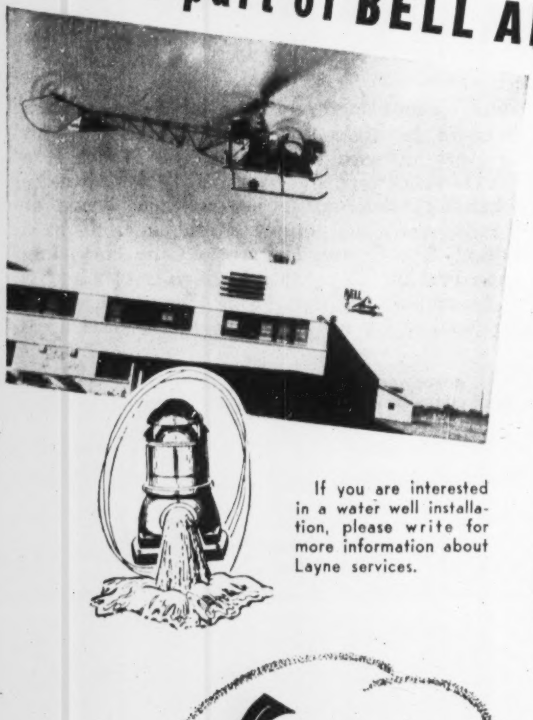

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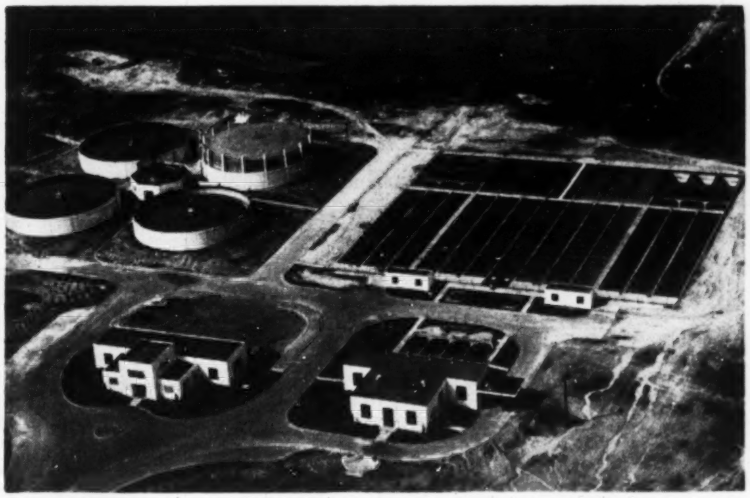

IN THE PACIFIC NORTHWEST Portland, Ore., dedicated this sewage works in '52. Generally speaking, the Far West is catching up with its sewage problems; water problems persist.

recreational waters in 1953. These were: the $20-million, 160-mgd high-rate activated sludge project at Owls Head in Brooklyn; the $23-million, 120-mgd step-aeration project at Hunts Point in The Bronx; and the $6-million, 15-mgd high-rate activated sludge plant at Rockaway in Queens. Also under construction was the $2.4-million, 10-mgd sedimentation works at Port Richmond on Staten Island; it is 82% complete. Bids have been asked for the first contract of a $25-million, 80-mgd extension to the Bowery Bay step-aeration works in Queens. All projects listed include the intercepting sewers required to collect existing discharges for treatment.

Work for 1953 will include completion of the Port Richmond project and construction of the Bowery Bay extension, plus an $8-million, 15-mgd high-rate activated sludge project at Oakwood Beach on Staten Island. About two-thirds of the city's sewage was being treated at the end of 1952.

• **New York (water)**—The Board of Water Supply continues to let contracts at a rate near $10 million a year in the program to complete by 1956 Stages 1 and 2 of its Delaware River development.

About 250 mgd of water now flows through the 85-mi, $164 million Delaware Aqueduct from Rondout Reservoir (dependable yield, 100 mgd). Rondout was filled last year behind $25.5-million Merriman Dam. In addition to the 2,400-ft long, 195-ft high earthfill dam, this project includes $4.2-million worth of highway relocation, reservoir clearing and fencing, plus sewage works for Grahamsville, N. Y.

The 5-mile, 10-ft dia tunnel from Rondout—under the Hudson-Delaware divide—to Neversink Reservoir is a $15.7-million job 73% completed. Neversink Dam, another 195-ft earthfill, will cost $33.3 million; of $32.8-million worth so far contracted, 81% is complete. The reservoir is due to begin filling this spring and will have an estimated dependable yield of 105 mgd.

East Delaware Tunnel, 26-mi, 11-ft 4-in. bore from Rondout to Pepacton Reservoir is 60% finished at a $44.3-million cost. Pepacton Reservoir is to be an 18½-mi long lake to yield at least 335 mgd of water. Clearing and fencing the reservoir area, constructing 55 mi of new highway, and building a small sewerage system will cost $21.2 million. Downsville Dam, behind which the reservoir will form, is a $31-million job; $30.5 million of it has been let so far to contracts now 75% completed. It is a 204-ft high earthfill 2,300 ft long.

• **New York (refuse)**—The 1,000-ton per day Gansevoort Destructor—No. 2 in a series of seven planned—was virtually completed at a cost of $4.5 million in 1952. The plant is to begin operation next month.

• **Niagara Falls, N. Y.**—A water treatment plant costing $7.8 million is under construction to bring present 45-mgd capacity to a new total supply of 80 mgd. This largest single capital improvement in the city's history—pressed by increased industrial water demand—is now well over 70% completed. It includes a 3,400-ft tunnel

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Gives you more "BIG GRADER" *features than any other!*

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Hydraulically operated from cab. Provides "big grader" maneuverability, front end stability, and traction on soft or sloping ground.

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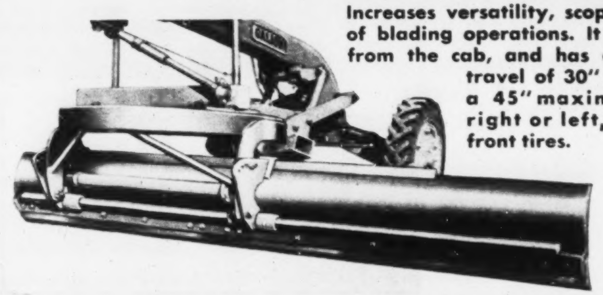

Increases versatility, scope, and ease of blading operations. It is operated from the cab, and has a horizontal travel of 30" — providing a 45" maximum reach, right or left, outside the front tires.

Other "special job" equipment available for increasing the usefulness of the Galion 503 Grader includes Snow Plow, Loader, Windrow Eliminator, and Bulldozer.

STANDING HEIGHT CAB *

All steel and rubber-mounted safety glass. Operator can work in a standing position with ease and unequalled visibility of work. Full-height hinged doors. Top half of cab easily removed. Adjustable windshields front and rear.

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Size 6.00-20 front tires are standard. Two larger sizes (7.50-20 or 8.25-20) available. *

*** FRONT SCARIFIER**
"V"-type hydraulic scarifier placed in the same position at front end of grader as on big graders. Completely visible from cab when in use. Downward pressure causes no loss of traction by the tandem drive wheels. Replaceable points.

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Positive four-wheel tandem drive . . . extra-strong, box-type, high-arched frame . . . heavy 4" solid steel drawbar with heavy-duty ball-and-socket connection to head block . . . extra-large hydraulic cylinders and direct drive hydraulic pump . . . 4 forward speeds 2.3 to 20.4 m.p.h. and high reverse of 4.3 m.p.h. . . . rugged high-clearance front axle . . . weight —8,720 lbs., blade pressure 4,975 lbs. — both without extras.

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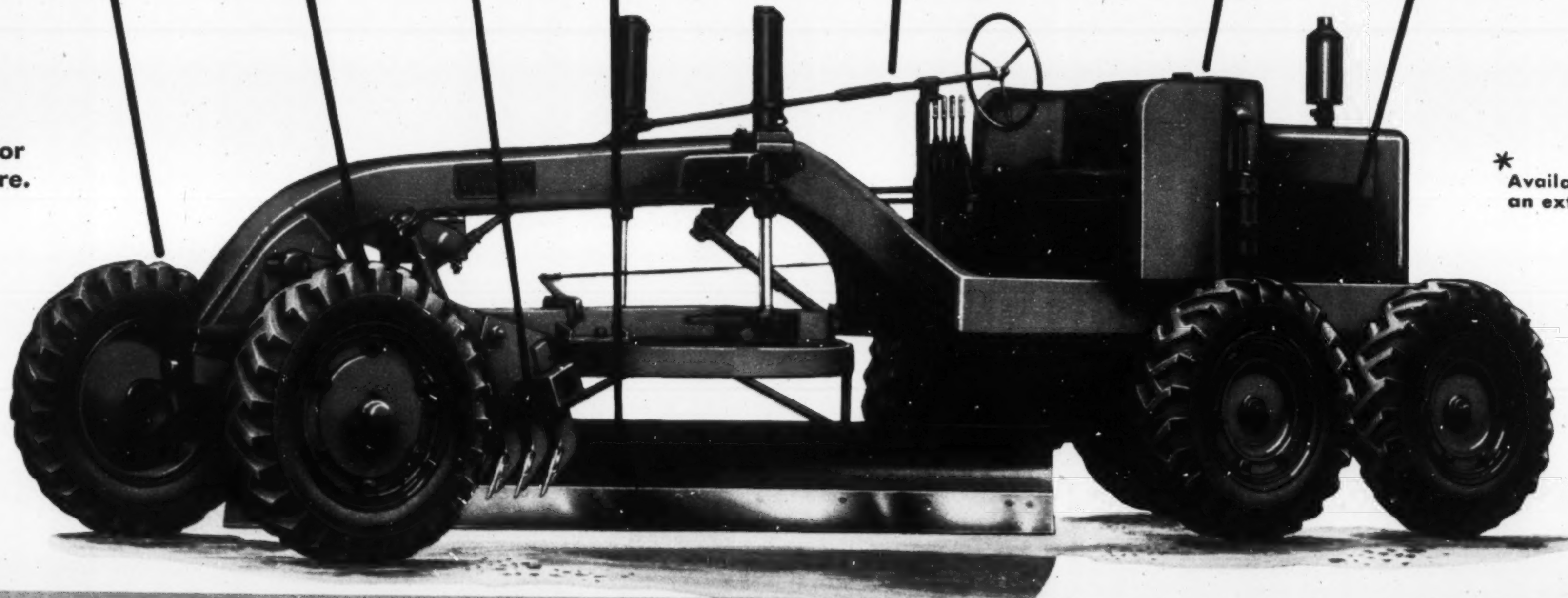
A 40 h.p. gasoline engine is standard equipment. A 36.7 h.p. diesel engine is available. *



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intake extending into cleaner waters of the upper river; pumping and filtration plant; and a feeder main to supply a section of the city when an existing old filter plant is abandoned.

• **Norfolk, Va.**—A 48-in. raw water main from an impounding reservoir west of Suffolk, Va., to the newly expanded Moores Bridge Purification Plant was finished during 1952. It is 16 mi of concrete cylinder pressure pipe, built at a cost over $2.3 million. An $866,000-pumping plant was virtually completed at Lake Prince last year. Also, the city spent $450,000 cleaning and relining with cement some 18 mi of cast-iron pipe of 16 to 30-in. diameters.

• **Oakland, Calif. (sewage)**—The East Bay Municipal Utility District's $23.5-million interceptor and sewage treatment plant program, virtually completed in 1951, went into its final stages in 1952. The $12.5-million treatment plant, which has been in use for over a year, was dedicated Sept. 19, and is complete except for a few minor additions. Work in 1952 included completion of five pumping plants with three still under construction and one yet to be awarded. The three major interceptors are now 97% complete. About 90% of the city sewage lines in the six cities served have been connected.

• **Oakland, Calif. (water)**—East Bay Municipal Utility District had $4.5 million in construction under way in 1952. Major units were a 4½-mile extension of its Sequoia Aqueduct, now more than 75% completed, and start of a new 20,000-mgd Lafayette filter plant.

• **Philadelphia (sewage)**—At the end of 1952 an average of $9-million worth of contracts a year had been let for five years in the city's $60-million sewage works program. The 140-mgd Southeast Sewage Treatment Works, to cost $7 million, had $2.4-million worth of contracts under way (and 37% completed) last year. Another $1.3-million worth of work will be let on the plant this year. The 136-mgd Southwest plant was scene of some $3.9-million worth of work in 1953; its eventual cost will be $9.3 million.

In extensive sewage collection construction, the city completed a $1.8-million sewer and, elsewhere, pushed the $6-million Southwest Main Gravity Intercepting Sewer to 85% completion. In addition to nearly $7-million worth of new intercepting sewers put under contract in 1953, the city contracted for about $4.5-million worth of work in the regular sewer system. And in 1952, the Wingohocking Street Flood Control Sewer was finished at a cost of $2.4 million; the $5-million Frankford Creek project continued, with about 40% of the job under contract.

• **Philadelphia (water)**—Continuance of the city's long-range, $38-million waterworks improvement program brought the over-all project to 73% completion during 1952. Most of the rest is expected to be allocated during '53. Major items completed last year were distribution reinforcements and extensions and the pre-treatment basins at Queen Lane Filter Plant. At Queen Lane, new facilities include post- and pre-chlorination installations for break-point chlorination of up to 120 mgd; 11 acres of reinforced concrete roof built over slow sand filters; taste, odor and corrosion control equipment—$4-million worth, in all. In the distribution system, 40 mi of pipe (54-in. steel, 24-in. cast-iron, and 20-in cast-iron) were placed. Another 40 mi are to be added in 1953; and $1.4-million worth of building and equipment work is to be done this year at Queen Lane.

• **Port Jervis, N. Y.**—A sewer system, pumping stations, and complete-treatment plant virtually finished last year in this Delaware River city are distinguished by this fact: New York City's Board of Water Supply designed and constructed then at a $2-million cost in exchange for the 440 mgd of water it will take from the Delaware above Port Jervis when its Stage 2 construction is completed.

• **Portland, Me.**—The new, million-dollar, 60-in. intake in Sebago Lake went into operation on Oct. 1. It involves 800 ft of subaqeous pipe, 5,600 ft of 54-in. pipe, 480 ft of 66-in., and a screen chamber.

• **Portland, Ore. (sewage)**—Some elements of the sewerage program are still under way but the main phases have now been completed with dedication of the treatment plant in 1952.

• **Portland, Ore. (water)**—The steel strike stalled work on Portland's 100-mgd, $5-million water line until September, after a ten-day start in July. It will bring more water into Portland from the city's Bull Run reservoir in the Cascades to the east. By year's end the line was 50% complete having been laid almost 12 mi east

REFUSE DISPOSAL attracts increased attention as incinerator designs improve and commercial composting of garbage again makes entrance on the American scene.

of the city. Final linkup is slated for June.

• **Providence, R. I.**—Phase I of the projected three-phase Blackstone Valley sewer project is practically completed. Its $3.3-million worth of interceptors were finished last September, and the $2.8-million Bucklin Point sewage treatment plant is in the initial stages of operation. There remain only tests and the putting into operation of sludge digestion and filtration facilities. Phase II, including doubling present 24-mgd treatment capacity, should start with some construction contracts due to be let in the spring; approval of a $7.5-million bond issue last November assures financing of this second phase. Phase III will include secondary treatment, yet to be designed, for wastes that are largely industrial.

• **Roanoke, Va.**—Last year saw Roanoke's Water Department complete $2.4-million worth of a $4-million improvement program, based mostly on improved and extended fire protection. (The city expanded from 14.8 to 26.7 sq mi in 1949.) Underground reservoirs, standpipe, elevated tank and booster station construction form a major portion of the work. In addition, there are 100 mi of new mains involved. The concrete underground reservoir and two booster stations were finished in 1952. So were more than 34,000 ft of main—6, 8 and 12-in. This year, tank construction and another 200,000 ft of water main ought to be completed, with the remainder of the project to wind up in 1954.

• **Sacramento, Calif.**—Work started in 1952 on a 54-mgd sewage plant for Sacramento and five suburban districts. It will employ sendimentation, chlorination, sludge digestion and elutriation. A $14-million contract has been awarded for the plant, and a $700,000-contract for a mile-long, 72-in. influent line plus a half-mile long, 78-in. effluent line. Completion is scheduled for mid-1954.

• **San Diego, Calif.**—The second barrel of the 72-mi aqueduct, connecting the Colorado River Aqueduct, at the west portal of San Jacinto Tunnel, and terminating at San Vincente Reservoir, near San Diego, Calif., started in 1952. Work is being done under Navy appropriation of $18 million, with the San Diego County Water Authority and the Metropolitan Water District of Southern California, eventual owners, to repay. Plans were drawn and work supervised by the

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Patterson Paving Co., Monongahela, Pa., contractors, used Blaw-Knox Complete Package Paving Equipment on western extension of Pennsylvania Turnpike—including 20-25′ Precision Subgrader (above) and 20-25′ Concrete Spreader, 20-25′ Concrete Finisher and 34-E Paver (top). A total of 8 Twin Disc clutches are used in the above equipment, including the Model EH (top), the Model MTU (center) and the Model CL (bottom).

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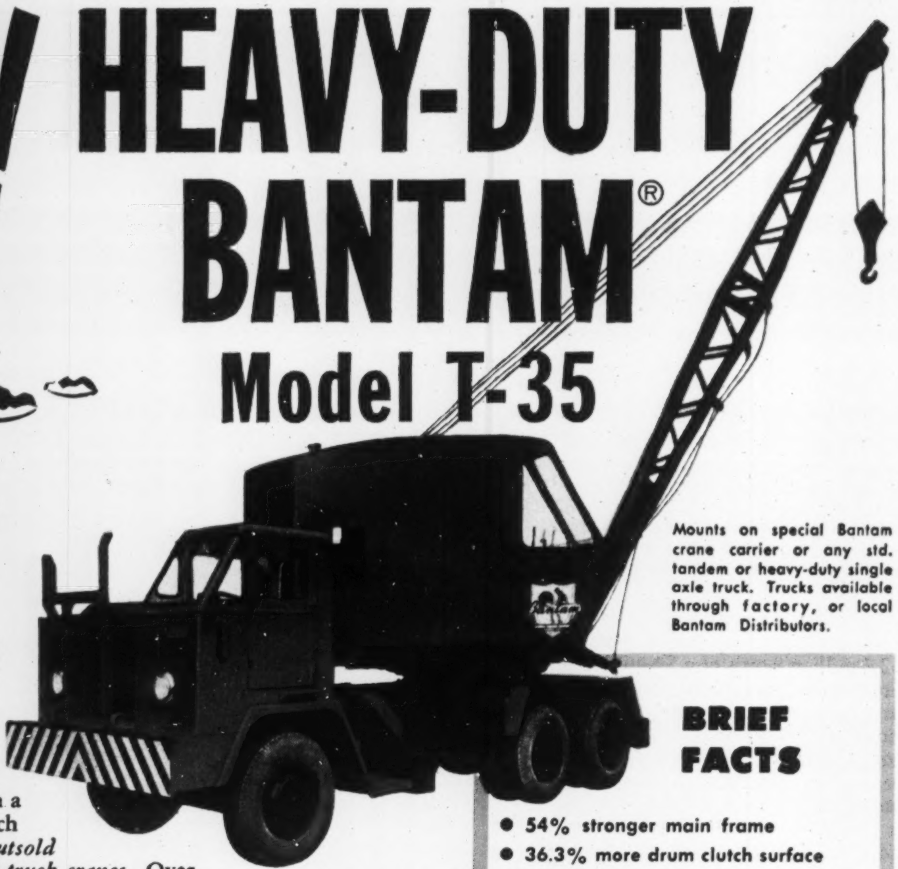

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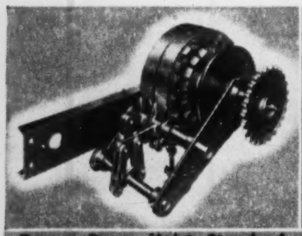

Power Boom Hoist Standard Improved design with increased brake surface and extra bevel pinion let you "inch" loads up or down with precision accuracy.

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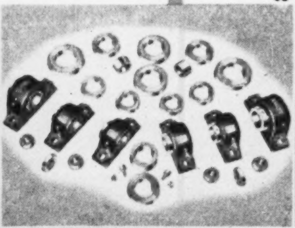
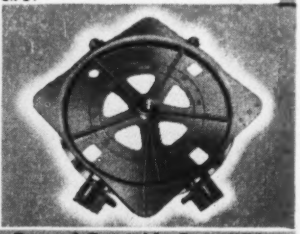


Full Power Advantages. Engine power transmitted smoothly through main machinery to work points by machine-cut gears and anti-friction bearings.



Rugged Turntable Base. Wider 4-point mounting with 4 oversize trunnion rollers and 4 hook rollers give the T-35 extra strength and stability.

Bureau of Reclamation, but 11th Naval District handled contracting and general supervision. Capacity when completed will be 95 cfs to San Luis Rey Crossing, and 80 cfs from there on. Total work under contract is $15.3 million worth with completion expected in 1954.

The city of San Diego, Calif., has a $5-million program to complete Sutherland Dam on Santa Isabel Creek, work on which was abandoned in 1928 with the multiple-arch structure 25% complete. Completion of the work including a 3,000-ft, 6-ft dia tunnel and 60,000-ft pipeline is expected late in 1953. The dam will be 161 ft above streambed and 1,250 ft long.

• **San Francisco (water)**—The new $10.5-million Bay Division Pipeline No. 3 was finished in 1952. With a capacity of 76 mgd, it brings total capacity for delivery of water from the mountain and Alameda systems to San Francisco reservoirs to about 190 mgd. Within the city, the water department's biggest job was completion of the $1-million Sutro Reservoir last February. It has a capacity of 32 mg.

The Hetch Hetchy division completed a $12.3-million second San Joaquin Valley pipeline to bring water from the Sierras to the San Francisco system. The line is 47.3 mi long and has a 50-mgd capacity.

• **Seattle, Wash.**—Work was started in 1952 on the first $800,000 units of a $25-million sewage disposal system planned for construction over a ten-year period. Controversy over the program led to resignation of the city engineer in 1952. The new city engineer is expected to make changes in the program before submitting it for final city council approval.

• **Spokane, Wash.**—Goal for 1953 in Spokane's intercepting sewer construction program is 85% completion of the $2.7-million ditching and tunneling job. At the end of 1952, 60% was done, with the major portion of the work boring through hard basalt deep under the downtown business section. Still planned is a disposal plant for which no date has been set for calling bids.

• **Tampa, Fla.**—The final 30% of Tampa's $12-million master sanitary sewer project was all but wound up by year-end: 28 mi of mains and interceptors, 10 small pumping stations and 2 large ones, plus a 36-mgd primary treatment plant and deep water outfall. In addition, the city built $615,000-worth of storm sewers—8,000 ft from 12 to 54 in. The year 1952 also saw completion of the final quarter of a $3.5-million water system expansion. Another $4 million worth of waterworks improvements is planned.

• **Washington, D. C.**—In its $40-million ten-year expansion of water supply, the Washington Aqueduct of the Washington District, Corps of Engineers, has construction about 50% completed on a 30-mg clearwell at the Dalecarlia filter plant. At the same location, it is excavating for a 450-mg, $5-million filtered water pumping station.

The plans for this station will be completed in about four months, and the job will be advertised for bids about July.

Before that, however, the aqueduct will buy separately the pumps, motors, switchgear, valves and piping necessary for installation in the station.

Aqueduct engineers expect to advertise in about four months a 48-in. high-pressure transmission main 2 mi long. Plans are to be completed by early fall for a 500-mgd raw water pumping station including a dam across the Potomac and a mile-long tunnel.

• **Wilmington, Del.**—A regional trunk sewer project to serve both Wilmington and New Castle County—two-thirds of the state's population—is now half finished at a total cost of $14.5 million. Fifty miles of collectors and a 40-mgd primary treatment plant on the Delaware River are involved in this effort to clean up a gross pollution problem. Fall of '54 is the final completion date scheduled.

• **York, Pa.**—At the start of the year work was 90% completed on excavation for a $4-million complete sewage treatment works for the city of York. The project as a whole was estimated to be about 25% finished, measured in money spent so far on all work. The project went under construction on April 7 of last year and was due to be finished in 800 days. Designed for an average flow of 12 mgd to serve a population of 90,000, the activated sludge installation will have complete mechanical sludge drying and incineration facilities. Its preaeration tank and grit chamber will be converted from existing, antiquated Imhoff tanks. Primary settling tanks, too, will be conversions of existing structures. Sludge will be dried on vacuum filters after digestion in three 90-ft diameter digester. Filtered sludge will be burned.

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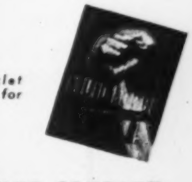

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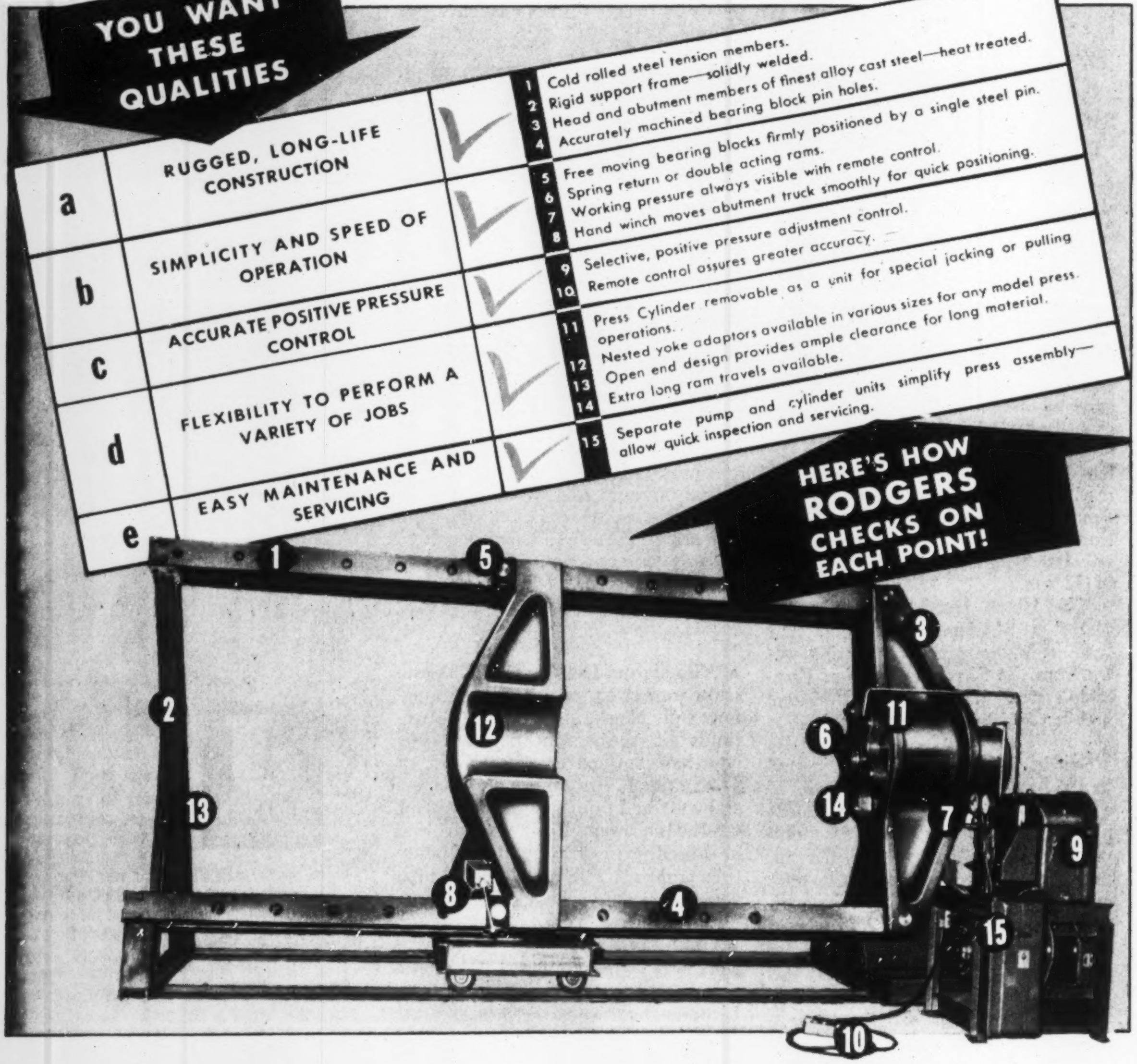

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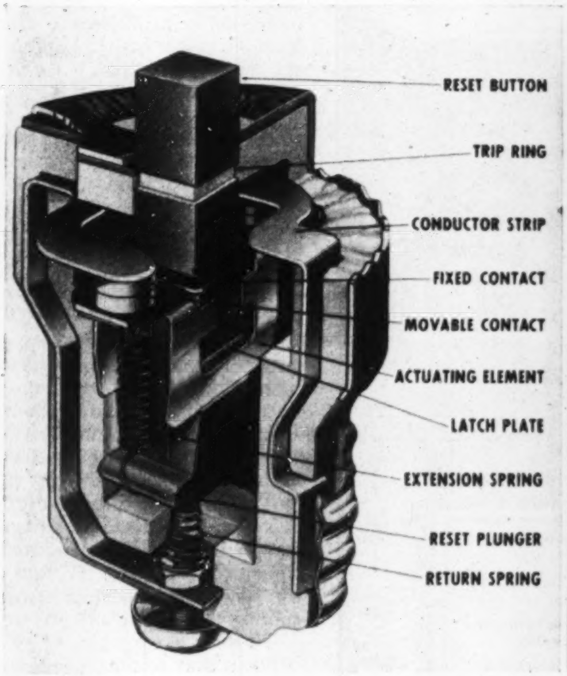


Permanent circuit protector fits standard base fuseholder

The Mini-breaker is a permanent circuit protective device that fits any standard Edison base fuseholder. It has all the advantages of the larger circuit breakers and is the first device of its kind to pass design, safety and performance tests of Underwriters' Laboratories Inc.

• **Looks like a fuse**—In size and appearance it bears remarkable resemblance to a regular screw-type fuse, but there the similarity ends. Instead of the one-time protection afforded by expendable fuses, the MINI-BREAKER provides permanent push-button protection for all 15-, 20- and 30-amp circuits delivering ac service to a maximum of 125 v.

In normal operation it interrupts excessive overloads and short circuits, tripping instantly on short circuits. It has a built-in time lag, however, for handling temporary starting loads and line surges. Although normally service can be restored in 10 seconds, the device is said to be completely trip-free. The manufacturer claims that it will not maintain a circuit that has not been cleared.

• **Basically simple**—Under normal line conditions electric current passes through a conductor strip and a thermostatic bi-metal actuating element which carries a pair of movable contacts (see illustration). On a direct short or sustained overload, excessive generated heat causes the element to bend away from the latch plates on both sides of the center reset plunger. A preloaded return spring forces the plunger out while twin extension springs pull back the element and movable contacts, away from the fixed contacts, thus breaking the circuit.

• **Just push the button**—In the tripped position the reset button exposes a trip ring to indicate the broken circuit. To remake this circuit—after the trouble has been corrected—the reset button is merely pressed all the way in, then released to its original position. This brings the contacts together, preloading the return spring at the same time.

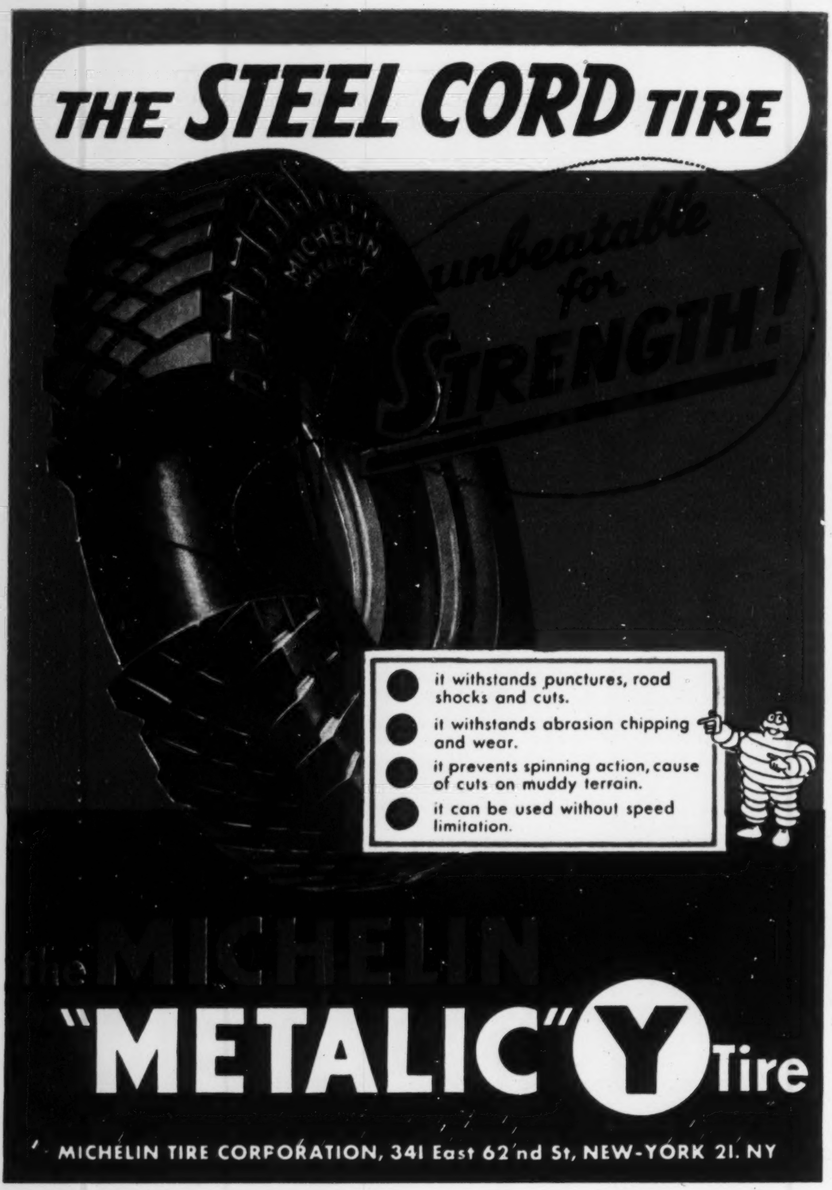
• **Tough U.L. tests**—To merit listing as a "Circuit Protector" in U.L. lists, the device had to undergo severe tests. Some of these were to: (1) safely interrupt 5,000-amp 125-v, dc calibrated circuit once; (2) complete 35 cycles manual make-and-break at 150 amp (for the 15- and 20-amp devices) and at 180 amp (for the 30-amp device); (3) make and break its rating in tungsten filament lamps four times at two-minute intervals without automatic trip or welding of contacts; (4) interrupt calibrated 5,000-amp circuit, 125 v, ac, 60 cycle at 50 percent power factor three times.

Since Mini-breaker does not contain a switch mechanism it was not required to pass standard U.L. endurance tests. On independently conducted tests, however, it has successfully completed make-or-break operations greatly in excess of the 10,000 cycles required, as well as thousands of cycles of overload trip tests at full voltage, according to the manufacturer. MECHANICAL PRODUCTS INC., DEPT. R, 1824 RIVER STREET, JACKSON, MICHIGAN.

Cellar drainer can be fully submerged without damage

Deming's new submersible cellar drainer contains no floats for adjustment. The motor starts when water level raises the stainless steel motor case. The automatic switch is sealed inside this case and the entire unit can be fully submerged without damaging the motor.

(Continued on page 174)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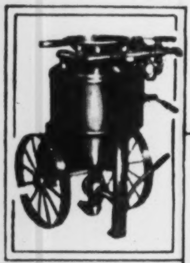
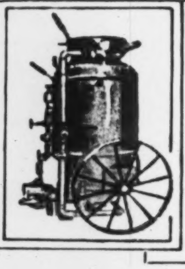
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420 Lexington Ave. New York City 17

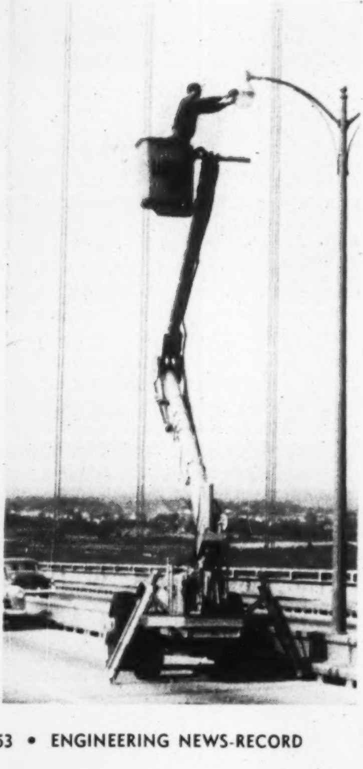
The motor is ⅓ hp, 115 v, 60 cycle, 1,750 rpm, split phase. It has two sealed lubricated bearings. Overload protection with automatic reset protects the motor against improper voltage or overload.

Pipe connections are 1¼ in. The unit is 16 in. high and will fit into an 11-in. sump. The unit ranges in capacity from 1,200 gph against a 22-ft head to 3,000 ghp against a 5-ft head. Shipping weight is 44 lb. THE DEMING CO., SALEM, OHIO.

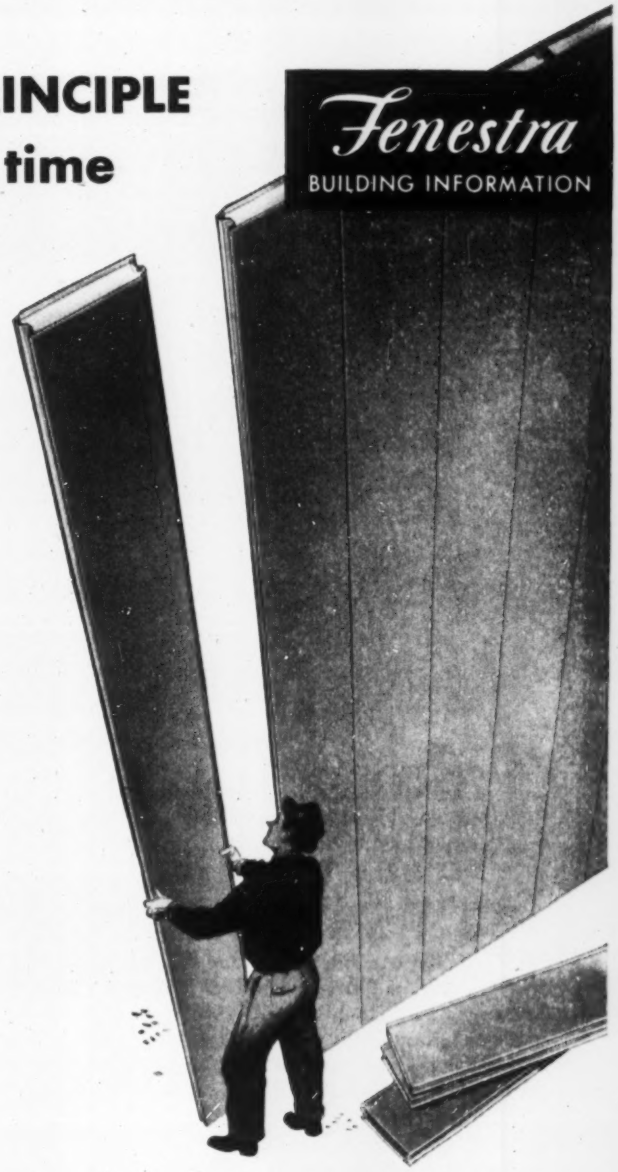
Sky Lift is a crow's nest mounted on a Pneumatractor

The man shown here repairing lights on a busy suspension bridge is working from a Sky Lift, a crow's nest mounted on a rotatable articulated boom above a Schramm Pneumatractor. It's operated either from aloft or on the ground for elevation, extension or rotation. With 500 lb. capacity, it can handle two men in two crow's nests or one man with a considerable amount of equipment or tools. Air goes aloft through a hose inside the boom and approximate total combined weight is 9,000 lb.

Some uses include painting; street light, power line or telephone pole work; rescue work; sandblasting, etc. SCHRAMM, INC., WEST CHESTER, PENNA.



Fenestra "AREA" PRINCIPLE saves you building time . . . and money!



Fenestra
BUILDING INFORMATION

Your building strides up area by area instead of creeping up inch by inch . . . a 16" wide, 14' long metal Fenestra "C" Panel, for example, forms 19 square feet of *inside and outside wall*, in one unit. Its 3" thickness is packed with insulation. Better protection than a 16" thick wall of masonry.

As the Fenestra* Panels quickly, tightly interlock and your walls enclose your building, a field coat of paint finishes the job. A prime coat was baked on the panels before they came to the site. Or they were *galvanized*—you have your choice.

No masons, no carpenters, no extra trades at all.

You're under cover and into production faster than you believed possible.

You've saved time, labor, materials and money.

You have walls so lightweight that you have even saved on structural steel.

You have walls that are clean and handsome and require practically no maintenance . . . walls that are firesafe.

You have walls you can even dismantle and reassemble when you want to expand.

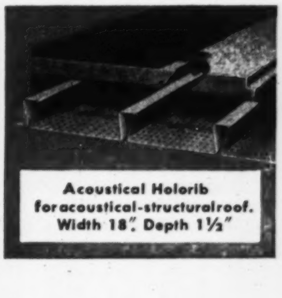
A lot of the handsome modern buildings you see as you travel around the country are testimony of the fact that Fenestra's "area" principle of building makes modern management sense.

For further information, write or have your architect write, the Detroit Steel Products Company, Department ER-2, 2286 East Grand Boulevard, Detroit 11, Michigan. *Trademark

Fenestra METAL BUILDING PANELS

"C" Insulated Wall Panels. Width 16". Depth is 3" Steel or aluminum.

Acoustical "AD" Panels for ceiling-silencer-roof. Width 16". Depth up to 7½"



Acoustical Holorib for acoustical-structural roof. Width 18". Depth 1½"

Acoustical "D" Panels for roofs, floors, ceilings. Width 16". Depth 1½" to 7½"

Take a tip

from this $850 tip-over

(A true story based on Company File #61474)

It was a simple enough job—loading our paver for transport. We'd never had trouble before. This time, the paver was part way loaded when the lowboy suddenly skidded on the uneven ground. We watched helplessly! The paver reared up, tipped, and came crashing down. We'd have been stuck for the $850.67 repair bill – except for our Contractors' Equipment Policy.

Suppose the paver had been *your* machine? Would the repair money have come out of *your* pocket?

Not if you were protected by a Contractors' Equipment Policy in the Hartford Fire Insurance Company.

Our policy covers your equipment on the job . . . in transit . . . in storage. It protects you against loss by fire, theft, explosion, collapse of bridges—by collision, overturn, landslide, windstorm and other specific hazards. *Automatically for 45 days* it will cover additional contractors' equipment which you buy.

Don't wait until an accident happens! Call your Hartford Fire Insurance Company Agent or your insurance broker—*now*. Make sure you have cash for your repairs.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company • *Hartford 15, Connecticut*

Safety ram is powered by lightweight hydraulic pump

Ohio hydraulic pumps are operated by an ordinary air line, and can be used directly with any type of cylinder, ram, press or jack. They've been designed for continuous service at maximum capacity without fear or overloading or overheating, according to the manufacturer.

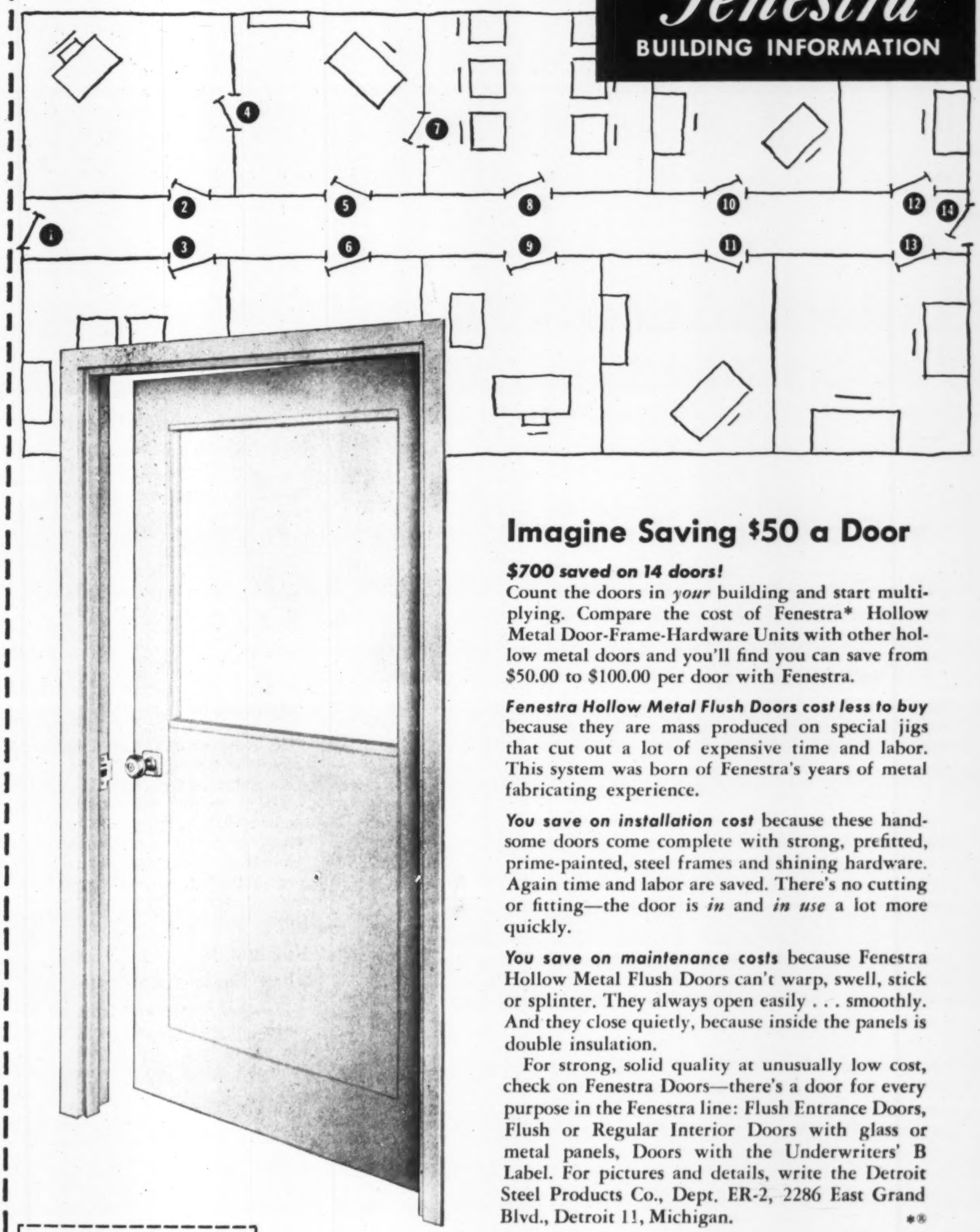
The pump is adaptable to many installations, weighs only 35 lb, and can be moved about easily on four casters. A companion product is the Ohio Safety Ram which unloads itself automatically to prevent any plunger popout. They are available in 20-, 35- and 70-ton capacities. Both pumps and rams are made under exclusive license by POWERMATIC INC., 1944 E. MARKET ST., AKRON 5, OHIO.

Foolproof sharpener for circular saw blades

Sawfilers will be interested in this new speed circular saw sharpener which is practically fool-proof. For precision filing, the workman merely clamps the sharpener to his work bench, places a circular saw blade on it with the proper mandrel, makes two simple adjustments and begins his job of filing. In twenty minutes or less the job is finished. Cross cut, hollow ground, combination and rip saw blades all can be sharpened with little or no previous experience, according to the manufacturer. Simple calibrations are marked on the shoulder of the guide arm and the file holder and the sharpener is fully guaranteed. The kit comes complete with three-cornered file, four mandrels and detailed working instructions. SPEED CORPORATION, 512 N. E. 73RD AVENUE, PORTLAND, OREGON.

(New Products continued on p. 176)

Fenestra
BUILDING INFORMATION



Imagine Saving $50 a Door

$700 saved on 14 doors!
Count the doors in *your* building and start multiplying. Compare the cost of Fenestra* Hollow Metal Door-Frame-Hardware Units with other hollow metal doors and you'll find you can save from $50.00 to $100.00 per door with Fenestra.

Fenestra Hollow Metal Flush Doors cost less to buy because they are mass produced on special jigs that cut out a lot of expensive time and labor. This system was born of Fenestra's years of metal fabricating experience.

You save on installation cost because these handsome doors come complete with strong, prefitted, prime-painted, steel frames and shining hardware. Again time and labor are saved. There's no cutting or fitting—the door is *in* and *in use* a lot more quickly.

You save on maintenance costs because Fenestra Hollow Metal Flush Doors can't warp, swell, stick or splinter. They always open easily . . . smoothly. And they close quietly, because inside the panels is double insulation.

For strong, solid quality at unusually low cost, check on Fenestra Doors—there's a door for every purpose in the Fenestra line: Flush Entrance Doors, Flush or Regular Interior Doors with glass or metal panels, Doors with the Underwriters' B Label. For pictures and details, write the Detroit Steel Products Co., Dept. ER-2, 2286 East Grand Blvd., Detroit 11, Michigan. *®

Fenestra

HOLLOW METAL DOOR—FRAME—HARDWARE UNITS

. . . save building time, labor, materials and money

OVER 15 YEARS WITHOUT RE-SURFACING!

A municipal street bridge floored with Hexteel. Long service has proved its dependability and economy.

HEXTEEL®

Klemp Heavy-Duty SURFACE ARMOR

CUTS BRIDGE MAINTENANCE COSTS 3 WAYS:

1 *Absorbs damaging vibration* of traffic *over* bridge; of trains *under* bridge.

2 *Offsets harmful contraction and expansion* caused by heat and cold.

3 *Holds asphalt, concrete, other road materials firmly in place*—eliminates cracking, rutting, swelling, buckling, warping, shrinking.

Klemp HEXTEEL can be installed on wooden, concrete, even on brick-surfaced bridges. When embedded, it gives you a *steel-reinforced* surface that bears the brunt of heaviest traffic, severest vibration and weather—*with no need for maintenance*. Easy to install—available in a variety of gauges and depths.

GET THE FACTS— *judge for yourself*

Let the specialized Klemp engineer know your problem, give you complete description, illustrations and specifications on HEXTEEL Surface Armor. He will cooperate with you fully. Write Klemp's Engineering Division today. No obligation!

KLEMP METAL GRATING CORPORATION
Executive Offices: 1371 North Branch Street
Chicago 22, Illinois
Plants and Warehouses at Chicago, Ill. and Houston, Texas

FREE!
Hexteel Catalog—facts, specifications, installation instruction.

KLEMP
We Tread The World with Safety

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1371 North Branch Street, Chicago 22, Illinois
Please send me the Klemp Heavy-Duty HEXTEEL Surface Armor catalog.

NAME..
ADDRESS..
CITY..................................STATE............ NR-2

Sawette is interchangeable with Hoffco's Scythette

A new chain saw unit called the Sawette is interchangeable with its forerunner, the Scythette. Powered by a 2-hp, 4,000-rpm engine, it features a steel chain sprocket drive, a 12-in. spring steel blade bar and 32-in. long chain saw. Its unique design allows a Sawette operator to cut trees and growth up to 6 in. dia. level with the ground while he remains in a standing position. It cuts under water as well, according to the manufacturer, and its weight is 26 lb.

The motor is a one-cylinder, two-cycle, two-port type with a float-feed carburetor, built-in push-button dump valve and one-qt gas tank.

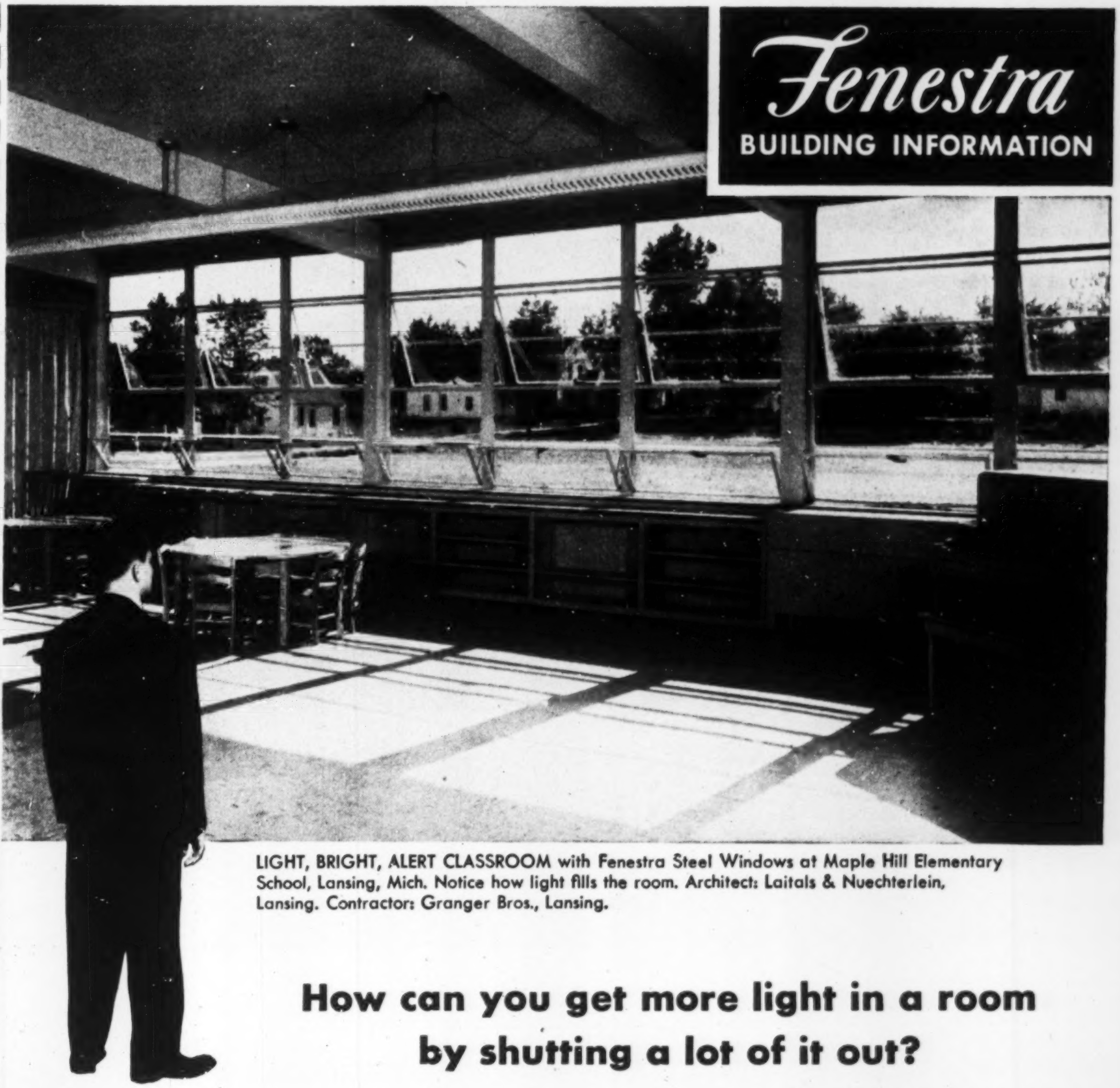
The Scythette attachment is recommended for cutting and trimming weeds, reeds and grass, also from a standing position. Machine is 54 in. long and has an over-the-shoulder carrying strap. HOFFCO INC., RICHMOND, INDIANA.

Vacuum switch cuts power when liquid supply runs out

Designed for use with either electric motors or gasoline engines, the Vac-On switch is a vacuum switch that shuts off power source when liquid supply runs dry. It has innumerable industrial, marine and manufacturing applications where safety of equipment depends on suction-delivered lubricants, fuel, water, etc.

The switch mounts on a suction line and is wired into the power supply or spark system on motors or engines, respectively. When suction falls below a predetermined negative pressure (approximately 1 in. of mercury) the switch goes into action. Electric motor

(*Continued on page 178*)



Fenestra
BUILDING INFORMATION

LIGHT, BRIGHT, ALERT CLASSROOM with Fenestra Steel Windows at Maple Hill Elementary School, Lansing, Mich. Notice how light fills the room. Architect: Laitals & Nuechterlein, Lansing. Contractor: Granger Bros., Lansing.

How can you get more light in a room by shutting a lot of it out?

Most of the school year, you need all the daylight you can bring in.

The only way you can avoid shutting a lot of it out is with clear glass.

And Fenestra* Intermediate Steel Windows are designed to give you *more clear glass area* . . . their frames are especially designed to be strong and rigid without being bulky.

They open up your whole room for an atmosphere of freedom and alertness.

You get controlled fresh air through the protecting vents in any kind of weather. No drafts. And rain can't get in.

Washing and screening are done from inside, so maintenance is simple and economical.

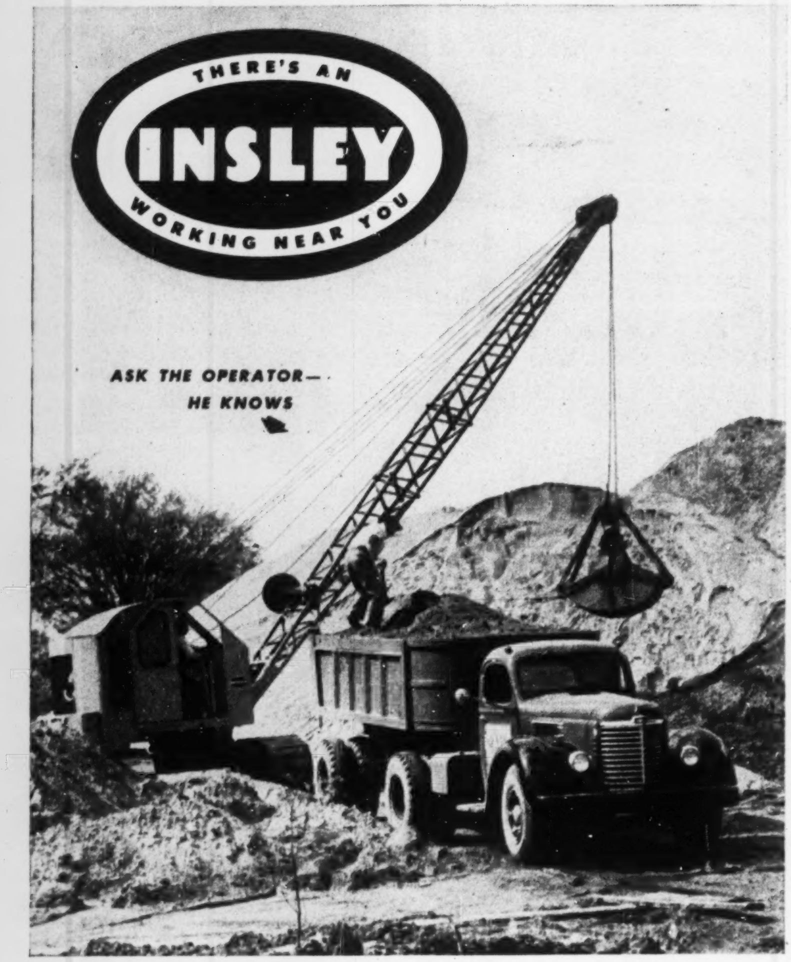
AVAILABLE SUPER GALVANIZED

Fenestra Steel Windows are available Super Hot-Dip Galvanized for complete protection from rust . . . *no painting necessary*. This Super Galvanizing is done in a special Fenestra plant . . . it is a Fenestra exclusive.

When you're buying daylight, get your money's worth. Get Fenestra Intermediate Steel Windows—made by America's largest steel window manufacturer. And write for your free copy of Better Classroom Daylighting by Lighting Expert, R. L. Biesele, Jr., and his staff. Detroit Steel Products Company, Dept. ER-2, 2286 East Grand Blvd., Detroit 11, Michigan.

*®

For better school environment Fenestra **STEEL WINDOWS**



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PROJECT RATED
INSLEY
BY THE USER—FOR THE USER

that Insley Equipment can be rated-for-the-project . . . he knows that specification alternates make it possible to buy the exact equipment to do his job best.

INSLEY MANUFACTURING CORPORATION • INDIANAPOLIS 6, INDIANA

models will work on motors up to 2 hp, ac and ½ hp dc. Gas engine model will short out the spark plug on any size gas engine. A hand lever is provided for manual restart. JAYCON ASSOCIATES, 404 N. WASHINGTON AVE., MINNEAPOLIS, MINN.

Electrifloor gets listing and approval from U.L.

The electrified steel panel subfloor recently announced has received the listing and approval of Underwriters' Laboratories Inc. Underwriters' has assigned card nos. #24596 and E24612 to Detroit Steel Products Co. and National Electric Products Corp. respectively, the companies co-operating in production of the cellular light-gauge steel floor.

National Electric's contribution to the electrifloor is a header duct system with conductors running through the cells of the floor. With this system electrical outlets can be installed in every square foot of floor. The subfloor is composed of unit panels, welded together in any combination to fit any shape of building.

The Fenestra-Nepco electrifloor has already been specified for installation in Detroit's City-County building; in Milwaukee, Wilkes-Barre, Scranton and Denver airports; and in many schools and office buildings throughout the country, according to the announcement. DETROIT STEEL PRODUCTS CO., DETROIT, MICHIGAN.

Magnet application ideas presented monthly by G.E.

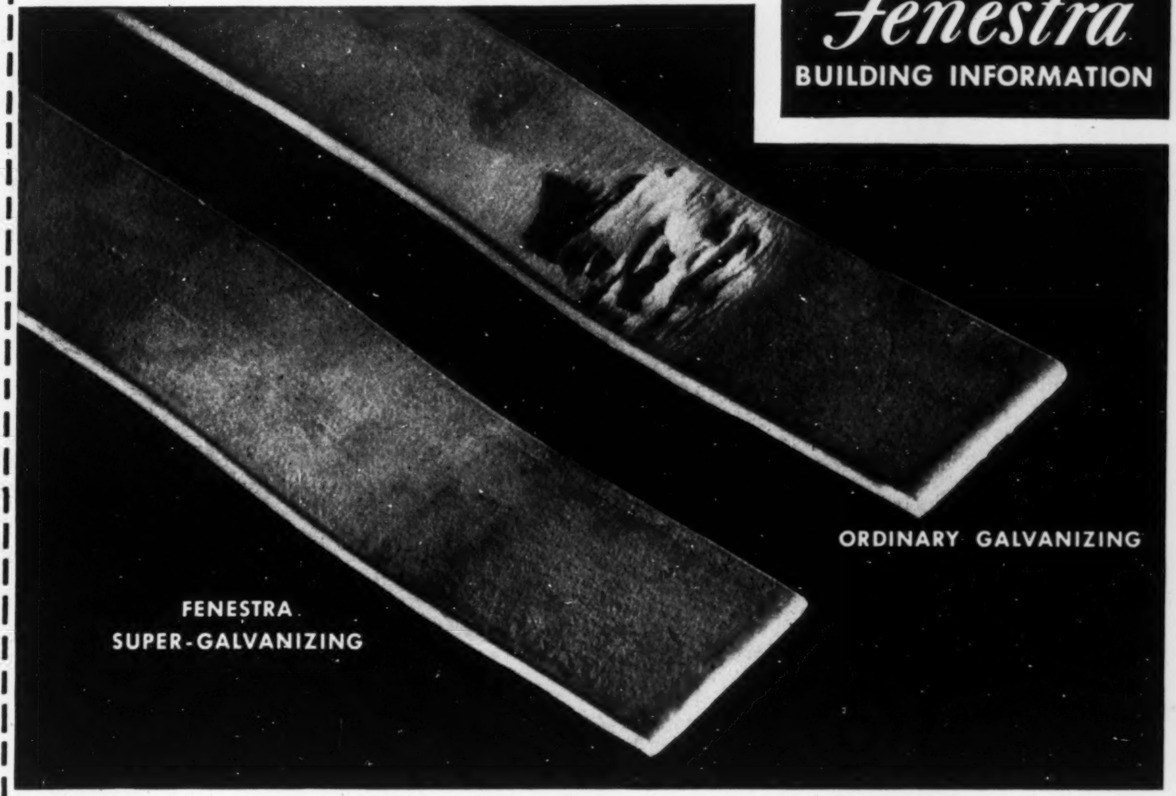
Some months ago the Carboloy Division of General Electric Co. made available two kits of magnets.

Now the company announces a "once-a-month" information kit describing these application ideas. The basic kit consists of a heavy binder with six application ideas. Each month the company will distribute a new sheet.

The six starter ideas include: use of magnets on conveyors to transport ferrous parts without actually tying or fastening; on sheet steel separators; on floor sweepers to clean the floor of ferrous objects; on plant layouts, tool racks and shear tables for cutting sheet metal. Each idea sheet will contain complete technical information and diagrams regarding the application described. CARBOLOY DEPARTMENT, GENERAL ELECTRIC CO., Box 237, ROOSEVELT PARK ANNEX, DETROIT 32, MICHIGAN.

(*New Products Continued on p. 180*)

Fenestra
BUILDING INFORMATION



Test shows why Fenestra Super Galvanized Steel Windows cost less to maintain than any other

First, no window is more rigid or rugged than a steel window. Fenestra* windows are steel windows . . . built by men whose job it is to keep Fenestra the largest steel window manufacturer in America.

Second, no window requires less maintenance than a Fenestra Super Hot-Dip Galvanized Steel Window. The test results illustrated above show you the tremendous difference between Fenestra galvanizing and ordinary galvanizing.

Two galvanized steel sections were bent, then straightened. On the one that was galvanized by the common method, the strain caused the coat of galvanizing to crack clear to the bare steel.

The Fenestra section was unmarred.

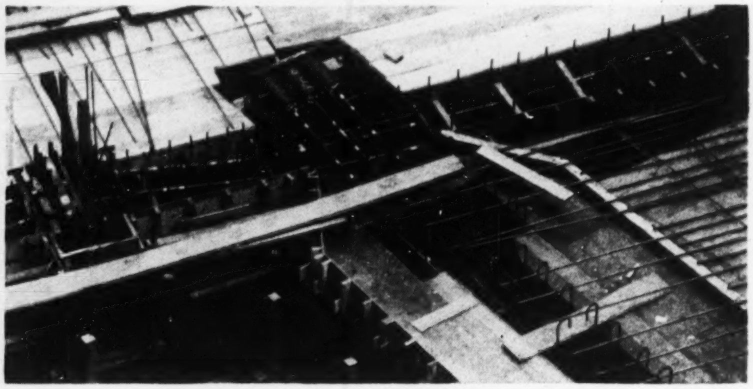
This simply illustrates the superior bond between the steel and the coat of galvanizing on a Fenestra Steel Window. It shows you why Fenestra Super Hot-Dip Galvanized Steel Windows, under normal conditions, will *never need painting*.

The reason for their superiority? They are galvanized in the only plant in America with equipment especially designed for the exacting job of hot-dip galvanizing steel windows. No other plant has the special deep tanks, the automatic controls.

For full information, write Detroit Steel Products Company, Dept. ER-2, 2286 East Grand Boulevard, Detroit 11, Michigan. *®

Fenestra **SUPER HOT-DIP GALVANIZED STEEL WINDOWS**

from the only plant in America especially designed to Hot-Dip Galvanize steel windows



Plastic tubing for prestressing cables

Working with wire rope specialists, plastics manufacturer develops split tubing that speeds the job

One of the problems involved in installing prestressed concrete is the protection needed on tensioning cables or rods to provide a friction-free covering and prevent adhesion of concrete at the same time. Various types of paper coverings, tapes and wires have been used, but are too costly or provide insufficient protection.

The answer to both objections is Aeroflex Split Plastic Tubing, developed by Anchor Plastics Co. with the co-operation of John A. Roebling Son's Co., wire rope specialists in Trenton, N. J.

The plastic tubing comes in 10-ft random lengths to fit snugly over cables of any standard diameter from ¾ in. up. Wall thicknesses vary from .030 to .040 in., depending upon diameter size. A ½-in. overlap, faced with interlocking longitudinal corrugations, combines with the natural plastic springiness to prevent any mix from seeping inside the tubing and lodging in the cable interstices. Since the tubing is unaffected by rain, ice, etc. it can be applied and left standing in the forms indefinitely. By comparison, paper covering must be applied immediately before a pour to prevent damage. The plastic will not rip or tear if struck by falling aggregate or a vibrator during a pour. It's unaffected by chemical reactions in setting concrete.

To apply the Aeroflex tubing, a workman merely opens the split with his thumb and, walking along the cable, applies it, letting it slide into place and envelop the cable. Masking tape is then quickly applied along the longitudinal split for extra protection and fastened around the tubing on 2-ft centers. To date the tubing has been used on many prestressed concrete structures including the Barrett & Hilp garage in San Francisco (ENR Nov. 13, '52 p. 38), a U. S. Navy rocket launching project, the Burma Bridge in Washington state, etc. Complete list of sizes, wall thicknesses, overlaps and additional data are available from Anchor Plastics Co. Inc., Dept. R, 36-36 36th Street, Long Island City, New York.

Sealer permits application of active-solvent coatings

Anyone who has tried to paint over asphalt, coal tar, mastic or Gilsonite coatings undoubtedly has experienced bleeding, staining, lifting, wrinkling or any combination of the four.

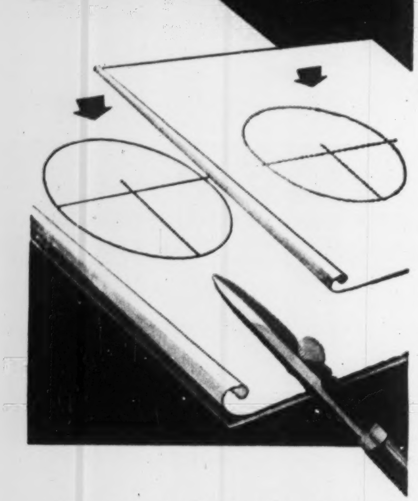
Now, according to the manufacturer, a new sealer permits painting of these materials by providing a protective coating.

It's Prufcoat Sealer P-25M and it has proved its worth in several different applications. The interior structural steel in a Midwest acid plant had been painted with a black, coal-tar paint.

When a renovation was undertaken the owner decided on white paint to improve lighting conditions. After applying one coat of P-25M over the coal-tar paint and allowing the sealer to dry for an hour, workmen applied corrosion-resistant Prufcoat BX white enamel without any bleeding or staining.

Write to Mr. G. Russell Hersam, Prufcoat Laboratories Inc., 50 East 42nd St., New York 17, New York.

Imperial
TRACING CLOTH
THAT DEFIES TIME!



• The renown of Imperial as the finest in Tracing Cloth goes back well over half a century. Draftsmen all over the world prefer it for the uniformity of its high transparency and ink-taking surface and the superb quality of its cloth foundation.

Imperial takes erasures readily, without damage. It gives sharp contrasting prints of even the finest lines. Drawings made on Imperial over fifty years ago are still as good as ever, neither brittle nor opaque.

If you like a duller surface, for clear, hard pencil lines, try Imperial Pencil Tracing Cloth. It is good for ink as well.

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SOLD BY LEADING STATIONERY AND DRAWING MATERIAL DEALERS EVERYWHERE

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PIPE FITTINGS

offer dependability safeguarded by advanced metallurgy

Year after year . . . in all kinds of service . . . Ladish Controlled Quality Fittings set new standards of reliability. One reason is the strong reliance on technical progress. Every new facility and advanced technique of modern metallurgy is fully utilized to develop desirable physical properties to maximum limits . . . while unrelenting test procedures continuously safeguard metallurgical soundness and provide users with authentic data proving the complete dependability of every Ladish Fitting.

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THE COMPLETE *Controlled Quality* FITTINGS LINE
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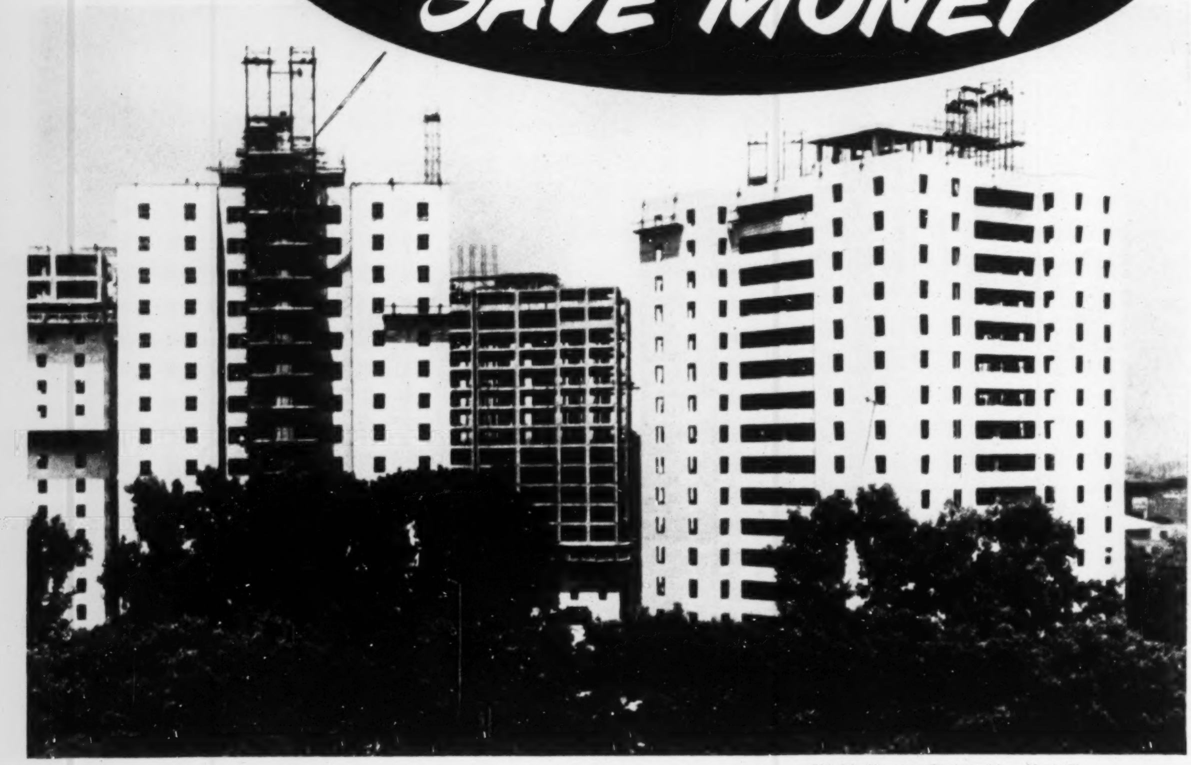
SAVE MONEY

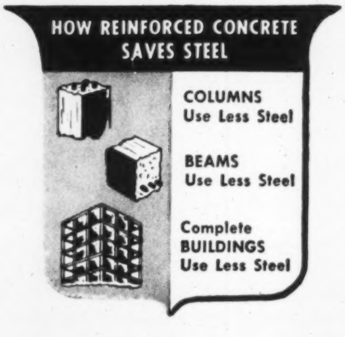


Webb Housing Project, New York City.
Contractor: Starrett Bros. and Eken.
Architect: Leonard Schultze Associates.
Structural Engineer: J. Di Stasio and Company.

...build with REINFORCED CONCRETE

● This housing development got a good start in life—it was designed for *reinforced concrete*!

Builders know they can count on a saving in steel, a saving in costs, a saving in construction time with reinforced concrete. They know they can count, too, on durable strength... on structures that are inherently firesafe, highly resistant to wind, shock, and quakes. These are the qualities that *always* go hand-in-hand with reinforced concrete. Use it for *your* next building!


HOW REINFORCED CONCRETE SAVES STEEL
COLUMNS Use Less Steel
BEAMS Use Less Steel
Complete BUILDINGS Use Less Steel

CONCRETE REINFORCING STEEL INSTITUTE • 38 South Dearborn Street, Chicago 3, Illinois

Cellar drainer can be fully submerged without damage

Deming's new submersible cellar drainer contains no floats for adjustment.

The motor starts when the water level raises the stainless steel motor case. The automatic switch is sealed inside this case and the entire unit can be fully submerged without damaging the motor.

Pipe connections are 1¼ in. The unit is 16 in. high and will fit into an 11-in. sump. The unit ranges in capacity from 1,200 gph against a 22-ft head to 3,000 gph against a 5-ft head. Shipping weight is 44 lb. The Deming Co., Salem, Ohio.

Chemical additive keeps dry powder dry

During the developing and testing of the many dry chemical fire extinguishers now on the market, one problem was most bothersome: The slightest moisture coming into contact with the dry powder would tend to cake it and prevent free flow of the chemical.

Stop-Fire, Inc., says it has the answer to this problem licked in its Redi-Flo model. A special additive developed by the company coats the powder particles, forming a water-resistant skin over each crystal. Called Dri-Kem.

The new Redi-Flo has a locking mechanism which prevents accidental discharge but permits instant use with a single release-squeeze motion. It carries the Underwriters' Laboratories approval and is available in 3-, 5- and 10-lb units. Stop-Fire Inc., 125 Ashland Place, Brooklyn, New York.

OK FOR MOST JOBS
O-K COMPRESSOR

OK's NEW HORNET '75'

The PERFECT PORTABLE COMPRESSOR For STANDBY and PRODUCTION JOBS

- **NEW**—75 c.f.m. portable air compressor designed for low cost mass production. Completely field tested.
- **ECONOMICAL**—Cost less to own, less to operate. Designed for economical operation. More air per dollar investment.
- **ONE-MAN PORTABILITY** — Light weight, easy to move. Can be handled by one man, towed behind passenger car.
- **LARGE WORK LEAD**—Will handle 45-lb. paving breaker or rock drill—or any two small tools.
- **GOLDEN ANNIVERSARY QUALITY**—Built in celebration of OK's 50th anniversary. Quality materials and workmanship throughout.

GET THE FACTS TODAY

OK's new specifications sheets give complete data on OK's new Hornet '75.' Send coupon today.

50 YEARS OF SERVICE TO CONTRACTORS AND BUILDERS

O.K. CLUTCH & MACHINERY CO.
1974 FLORENCE ST., COLUMBIA, PA.

OK Clutch & Machinery
1974 Florence St., Columbia, Pa.

Send complete data on OK's new Hornet '75.'

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Company ....
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City .... State ....

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COMPRESSED AIR
FOR LESS with

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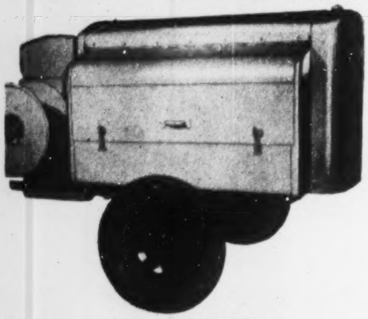

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POWERED BY CHRYSLER
INDUSTRIAL ENGINE

You *can* reduce costs today, by using a Smith 105-P for the *majority* of your compressor work.! Delivers 105 cu. ft. per minute -- combines heavy duty with light weight; easily portable. Chrysler Ind. 15 Engine has 6 cyl., 4" bore, 5" stroke, 377 cu. in., 3" crankshaft, 7 main bearings, sodium cooled valves and Stellite valve seats for heavy duty, long life. Compressor valves — stainless steel disc type with Manganese Bronze seats. Improved type pilot valve and simplified control.

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430 College Street
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Send complete literature and prices on the low-cost 105-P Smith Compressor.
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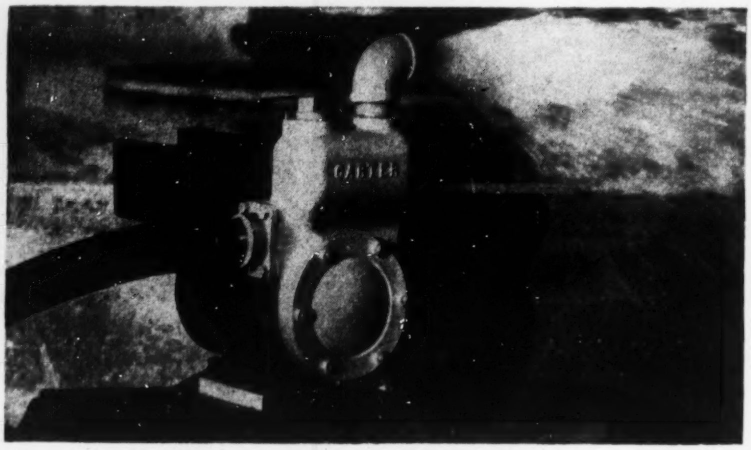
☐ Also send name of nearest dealer.



New line of self-priming centrifugals

Humdinger line runs from 1½ to 10 in. and has higher capacity-head abilities with normal engine sizes

The standard AGC pump rating for a 1½-in. centrifugal pump is 300 gph, but the manufacturer rates and guarantees the one shown here at 5,500 gph. It's one of the new advanced line of Humdinger pumps for contractors announced at the Associated Equipment Distributor's convention in Chicago earlier this week.

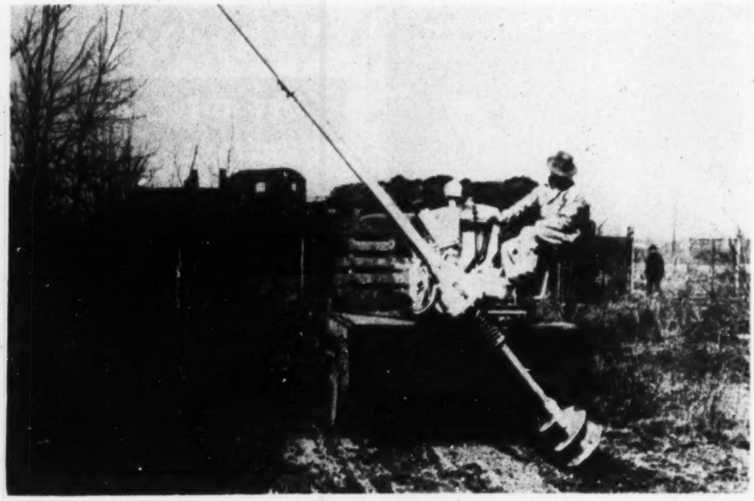
Made by the Ralph B. Carter Co. whose researchers and engineers have come up with startling new developments in self-priming centrifugals, the pumps range from this 1½-incher up to a 10-in. model rated at 250,000 gph. The only components inside the volute cases are the impeller and seal. It excludes every other possible wearing part that might contribute to mechanical or hydraulic losses.

Portable earth drill

This is the Buda Model Y-1 earth drill. It's self-powered, portable, and can drill holes vertically or at an angle in any direction (except toward the truck) up to within a few degrees of horizontal, ranging in diameter from 6 to 36 in. All controls are hydraulic including: raising from traveling to operating position, adjusting to vertical and adjusting to angle drilling.

Powered by a Buda 6-B-230 gasoline engine, the rig has four speeds forward and one reverse. The unit can be mounted on a 1½- to 2½-ton truck.—The Buda Co., Harvey, Ill.

(*New Products continued on p. 189*)



BIG LOADS RIDE EASY

ON A *Mack's* BROAD SHOULDERS

It will pay you to find out what Mack six-wheel trucks can do to save money and boost profits on your job through unfaltering traction and faster, uninterrupted schedules.

That's because only Mack six-wheelers boast the unique advantages of Mack's exclusive Balanced Bogie and Power Divider . . . with all the benefits they give you in maximum flexibility, even tire loading, uniform braking, simplicity of design and positive traction regardless of the toughest terrain.

Write to us today for your free copy of booklet describing the Mack Balanced Bogie with Power Divider, or contact your nearest Mack branch or distributor.

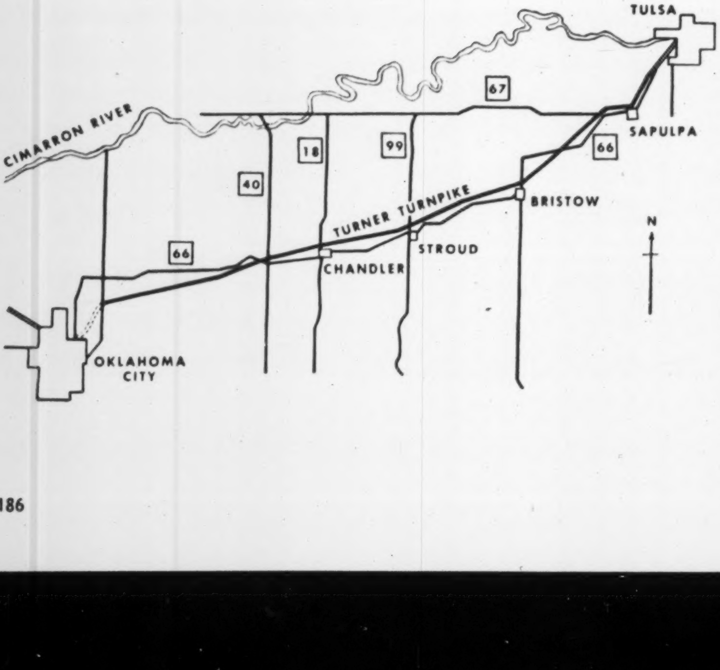
Mack
TRUCKS

. . . outlast them all

Mack Trucks, Empire State Building, New York 1, N. Y. Factory branches and distributors in all principal cities for service and parts. In Canada: Mack Trucks of Canada, Ltd.

Performance on the Turner Turnpike makes the Allis-Chalmers AD-40 Grader

A New Regular for Gillioz



TULSA
67
CIMARRON RIVER
SAPULPA
18
99
66
40
TURNER TURNPIKE
BRISTOW
N
66
STROUD
CHANDLER
OKLAHOMA CITY

One of the most modern highways in the Southwest will soon connect Oklahoma City and Tulsa, Oklahoma. Twin 24-foot roadways will save travelers almost a full hour of driving time on this 88-mile stretch; 12-foot paved shoulders, slight grades and long curves will make driving easier and safer, too.

Turner Turnpike in final stages of construction shows how it aims for horizon with arrow-like straightness. Right-of-way is 200 to 400 feet wide. Grades are maximum of 3 percent.

M. E. Gillioz, Monette, Missouri, was awarded three of the Turner Turnpike contracts; each for clearing, grading, culvert work and fine grading. Gillioz, with half a century of experience in earth moving, has one of the largest contracting organizations with one of the biggest fleets of Allis-Chalmers tractors in the area. And now there's a new regular in the Gillioz fleet — an Allis-Chalmers heavy-duty AD-40 motor grader.

The AD-40 proved to Gillioz on his Turner Turnpike jobs that it represents real progress in motor grader design. His operators could see front wheels and both ends of the blade well because (1) A-C's single-member frame goes from front axle to platform; (2) front platform corners are tapered; (3) lift cases are smaller; (4) control box is lower, and assemblies have been eliminated from the front panel to provide best possible visibility of the work area directly ahead of the operator. Low center of gravity made the new grader ideal for sloping operations, too.

Gillioz men also like the operating comfort built into the AD-40. It has ample leg room for stand-up operation. And for easy, comfortable sit-down work, the AD-40 has a seat that rolls forward at a touch plus an adjustable-height steering wheel.

These advantages teamed up with a new kind of power steering and outstanding service simplicity to make the AD-40 a new regular for Gillioz. It will pay you to consider putting this job-proved grader on *your* team, too. See your nearby Allis-Chalmers dealer soon for all the facts.

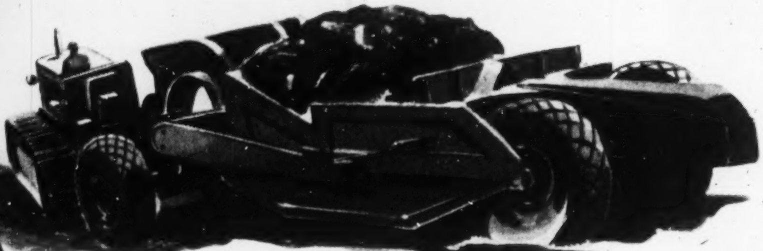
ALLIS-CHALMERS
TRACTOR DIVISION—MILWAUKEE 1, U. S. A.

Allis-Chalmers AD-40 finish grades one stretch of the new turnpike. The completed highway will be divided by 15-foot landscaped center mall.

An HD-20, one of the Gillioz fleet of ten Allis-Chalmers torque converter tractors, sends a rubber-tired scraper off to the fill with a flying start.

Protection by

TOUSEY!



TOUSEY finishes protect this heavy duty road scraper against every form of abuse—repeated impact from rock and gravel, heat, water, weather and constant vibration. This particular machine is coated with a brilliant red—durable in color as well as surface—offering another form of protection, that of product identification.

TOUSEY PRODUCTS

DURACOTE for DURABILITY

THE TOUSEY VARNISH COMPANY

[illegible] WEST 25TH STREET • CHICAGO 16, ILLINOIS

All-rayon transmission belt has much higher flex life

Whirring at tremendous speed one of Goodrich's Drivesall rayon fabric transmission belts powers a 4-ft Symons Nordberg cone crusher. The crusher handles 100 tons per hour of rock measuring up to 2x5 in. and reduces it to minus 1½ in. It's been running 14 hours a day, 6 days a week for over a year, and reports say there has been less stretch and shrink, although exposed to dampness, than on conventional belts previously used.

The all-rayon belt is said to be 25% stronger and to have as much as ten times the normal flex life of cotton fabric belts with the same number of plies. Because rayon fabric plies are thinner, they flex easier over small-diameter pulleys. Thus, more plies can be used, resulting in stronger belts. A six-ply Drivesall belt, for instance, is only as thick as a four-ply 32-ounce cotton fabric belt, according to the manufacturer. B. F. GOODRICH CO., AKRON, OHIO.

Metal-gouging torch uses carbon arc, compressed air

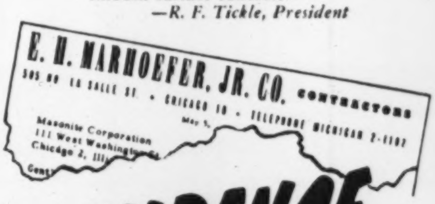
The Arcair method of metal removal is meeting with a great deal of acceptance in the construction business. It's a method whereby a carbon arc and a stream of compressed air are brought together into a concentric cable and into the electrode holder. While originally designed for gouging stainless steel, the Arcair torch is used now on all types of ferrous and non-ferrous alloys.

As the pictures show, a lead from a welding machine and another from an air hose are connected to one end of the concentric cable. The other end is fitted to the Arcair torch. Hand

(Continued on page 192)

ADJUSTABLE JOIST CO.
Formwork Erected and Removed for
Reinforced Concrete Construction
MINNEAPOLIS, MINNESOTA

"... the best material on the market for forming smooth-surface concrete."
—*R. F. Tickle, President*



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Masonite Corporation
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"We have found that through the use of Masonite Concrete Form Presdwood, we are able to reduce time and therefore costs of producing finished concrete ceilings."
—*E. H. Marhoefer, Jr.*

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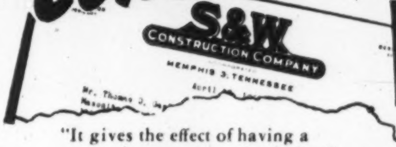

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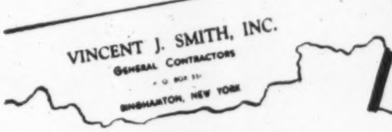
CONSTRUCTION COMPANY
MEMPHIS 3, TENNESSEE

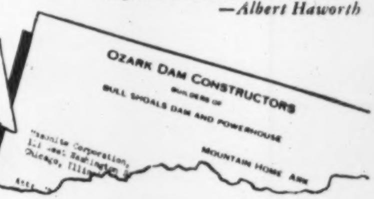
Albert Haworth

"It gives the effect of having a much more expensive facing."
—*Erich E. Schmied, President*

'We are happy to recommend your form board to other engineers and contractors."
—*Albert Haworth*



VINCENT J. SMITH, INC.
GENERAL CONTRACTORS
BINGHAMTON, NEW YORK



OZARK DAM CONSTRUCTORS
BUILDERS OF
BULL SHOALS DAM AND POWERHOUSE
MOUNTAIN HOME ARK

"... even if we had to pay 4 times the purchase price, it would still be economical to use."
—*George P. Lehn, Genl. Sup't*

"... used 14 carloads during the construction of Bull Shoals Dam and Powerhouse."
—*M. H. Slocum, Project Sup't*

contractors everywhere save dollars with

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CONCRETE FORM PRESDWOOD

You save time and money, too—on any job that calls for a smooth, easy-to-paint surface—when forming with Masonite Concrete Form Presdwood®. This dense, grainless all-wood hardboard offers all these advantages:

1. Can be used again and again.
2. Grainless—won't split, splinter or crack.
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4. Can be curved for arches, columns, etc.
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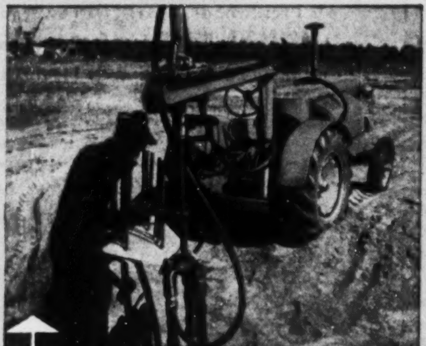
Better Hardboards for Better Concrete

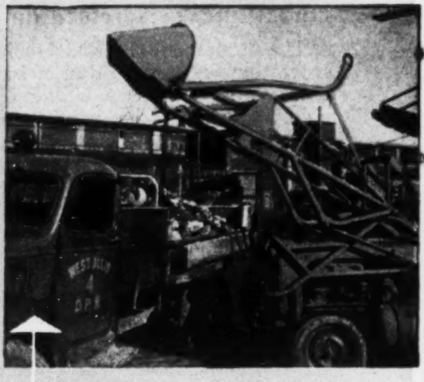
LE ROI
TRACTAIR

LE ROI GIVES YOU MORE FOR YOUR MONEY

Mobildrill — A light-weight Le Roi-CLEVELAND wagon drill unit mounted on Tractair. Costs about half of what you would pay for separate compressors and rock drills to do same work. Its all-around usefulness makes drilling faster, easier. Quickly pays for itself out of savings.



Tamping — Tractair with Le Roi-CLEVELAND Multiple Tamper and work-saving air feed keeps up with three men shoveling or a backfilling tractor. You not only get faster, easier tamping, but also better compaction and lower costs.



Loading — Front-end loader can be attached to Tractair in only a few minutes. Boom combines bucket and crane. Crane folds back out of way, when not in use. Bucket holds 10½ cu. ft. — lifting capacity is 1000 lbs. Lifting capacity of crane is 800 lbs.

with Backhoe

cuts trenching costs for Illinois man . . . combines air power, digging power, and mobility, to do former two-day job in only half a day!

Your digging job too small for a power shovel? Too big to do by hand economically? Then, mister, you're money ahead with a Le Roi Tractair-Backhoe! It's a hydraulic backhoe attachment mounted on a Tractair, Le Roi's combination 35-hp tractor and 105-cfm compressor — you get both air power and digging power in a single piece of equipment.

Tractair-Backhoe units are saving money for contractors every day. Take John Proszek, plumbing contractor of Chicago, Illinois: He uses a Tractair-Backhoe to dig two ditches 60′ long x 6½′ deep for new home-service connections — and does in half a day what it took two days to do before!

The versatility of Tractair helps you do many jobs with greater speed and economy. Its *air power* lets you break through pavement or frost — run air tools. Its *digging power* lets you dig as deep as 7′ — cut through hard ground that a pick and shovel can't penetrate — keep the bottom of a ditch perfectly level — dig straight-end walls and square corners.

But that's only part of the Tractair story. There are other attachments you can use to multiply Tractair's usefulness and hold down your investment in special equipment. With Le Roi-CLEVELAND air tools, you can break pavement, drill rock, dig clay, tamp fill, etc. With a front-end loader (it has 8 accessories you can interchange quickly), you can load, lift, backfill, plow snow, etc.

Ask your nearby Le Roi distributor to demonstrate a Tractair. Write today for job-data sheets and bulletins on Tractair.

T-34

Compressors
Tractair
Rock Drills
Engines . . .

LE ROI COMPANY MILWAUKEE 14, WIS.
Plants: MILWAUKEE • CLEVELAND • GREENWICH, OHIO

Nation-Wide Sales-Service Network

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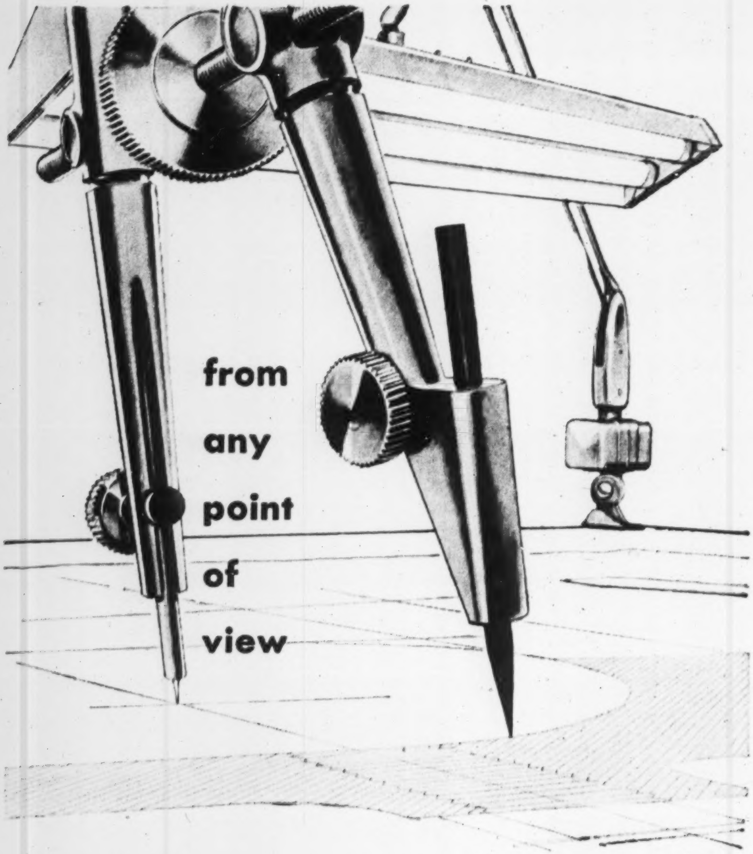
MORE UTILITY! MORE PROFIT!

Backfilling — A backfill blade adapts the versatile Tractair for such jobs as filling trenches, light grading, and other light dozing work — anywhere along the job site. Backfill blade is 6′ wide, moldboard is 2′8″ high. Maximum lift above ground is 1′4″.

Drilling, Breaking, Digging — Tractair puts air power to work running Le Roi-CLEVELAND air tools. Here, Tractair operates a clay digger, to speed up trenching. Tractair can be used also to run Le Roi-CLEVELAND breakers, sinker drills, backfill tampers.

Earth Drilling — Tractair with Utility Boom operates air motor-driven earth auger up to 16″ diameter — speeds up anchor-hole digging and other earth-drilling jobs. It's another way Tractair gives you extra hours of service by doing the work of specialized equipment.



you'll get better results with ARKWRIGHT

First, the drawing and second, the reproduction will be cleaner, clearer, sharper when you use Arkwright Tracing Cloths.

In the drawing you'll work more smoothly, easily—without pinholes, uneven yarns or other imperfections to slow you. You'll get clean, "feather-free" lines even over an erasure.

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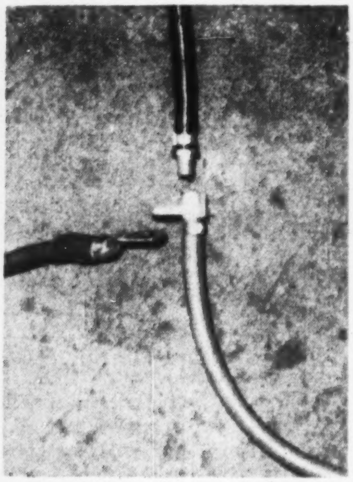
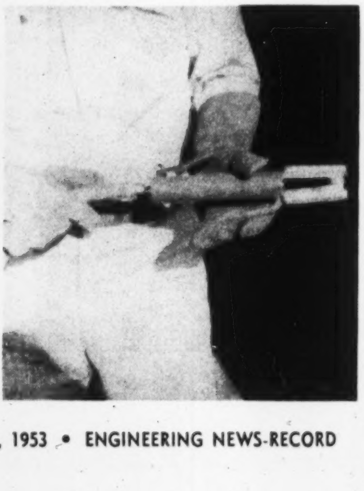
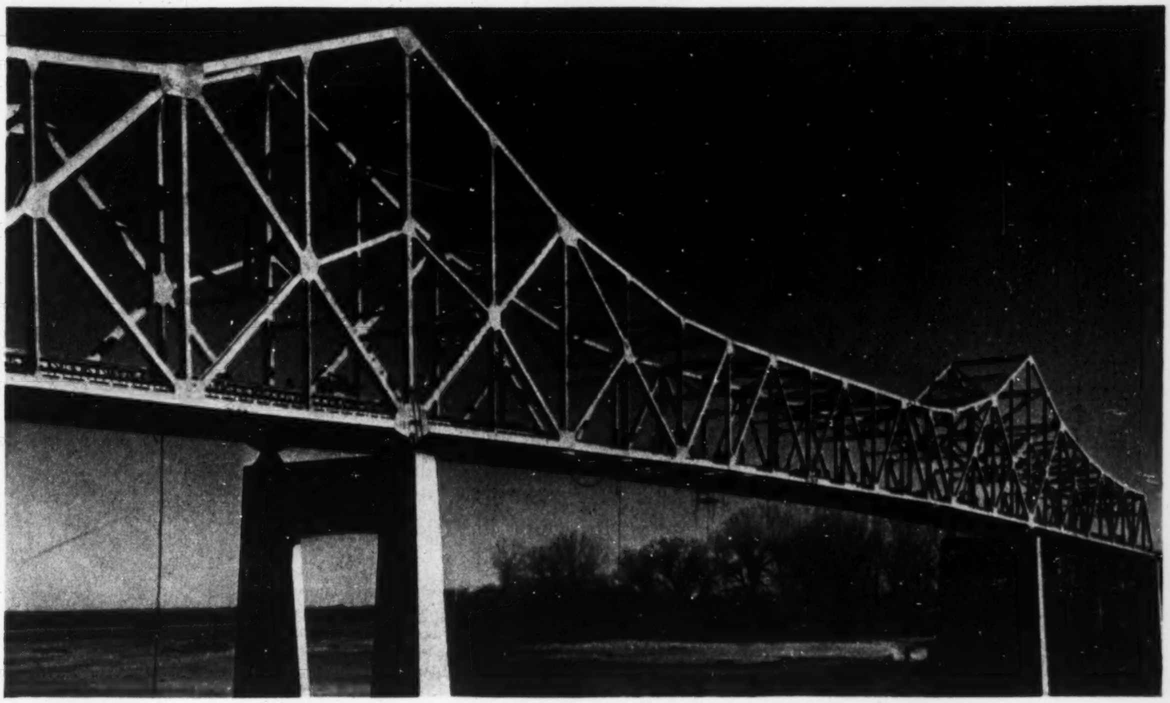


tightening is usually adequate, but a strap wrench can be used to tighten this connection if desired.

The electrode is then placed in the holder with the air jet holes projecting toward the arc end. The torch is held so that the electrode slopes back from direction of travel with air stream directed to strike work behind the arc. Electrode's angle determines the depth of groove. Instead of drawing an arc as in welding, the electrode is pushed into the plate, almost touching it. The electrode and automatically aligned jet of air may be rotated to any angle, even for overhead gouging.

The torch is designed to operate on a range of 200 to 550 amps, depending upon electrode diameter. Best air operating pressure is 90-100 psi, although 60 psi is effective on some applications. Carbon-graphite electrodes, plain or coppercoated, in diameters from $\frac{1}{4}$ in. to $\frac{1}{2}$ in. are suggested. According to the manufacturer, total operating cost for the Arcair system, including electricity is from $1.50 to $2.00 per hour. ARCAIR COMPANY, DEPT. R, 2614 BURWELL ST., BREMERTON, WASHINGTON.





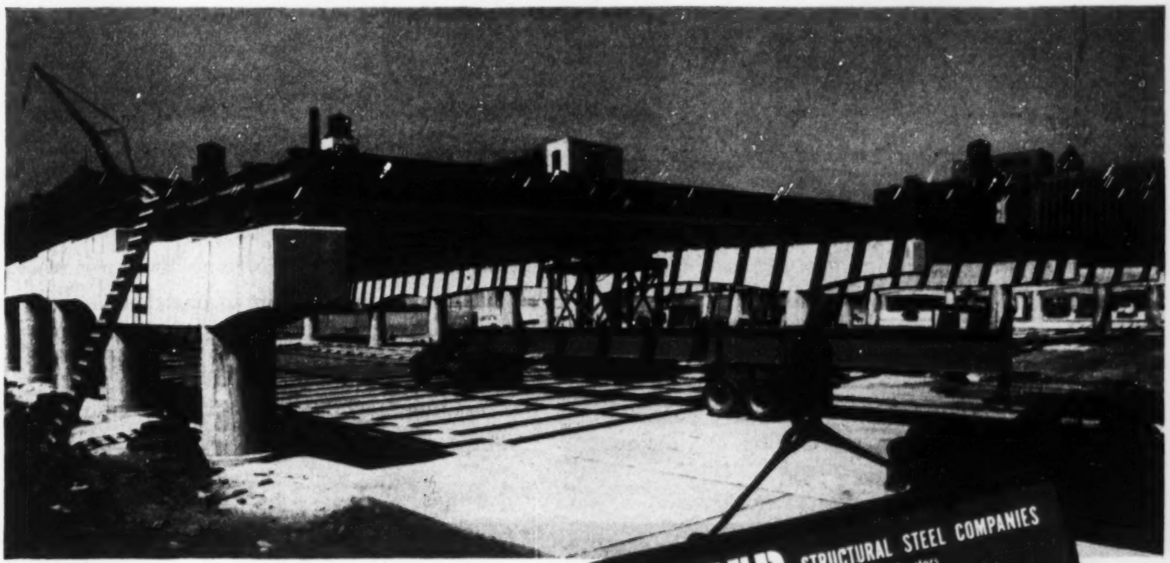
Main Span of Bridge over Missouri River at Omaha, Nebraska. 2200 Tons fabricated and erected.

River Bridges and Super Highways

Both fabricating the structural steel and the erection of it are made-to-order jobs for Allied. The facilities of 3 fabricating shops work as a unit where very close schedules must be met.

Send your plans and specifications to us to be estimated.

Section of the Congress Street Expressway, Chicago, Illinois.



ALLIED STRUCTURAL STEEL COMPANIES
Engineers • Fabricators • Erectors
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- **Clinton Bridge Corporation**
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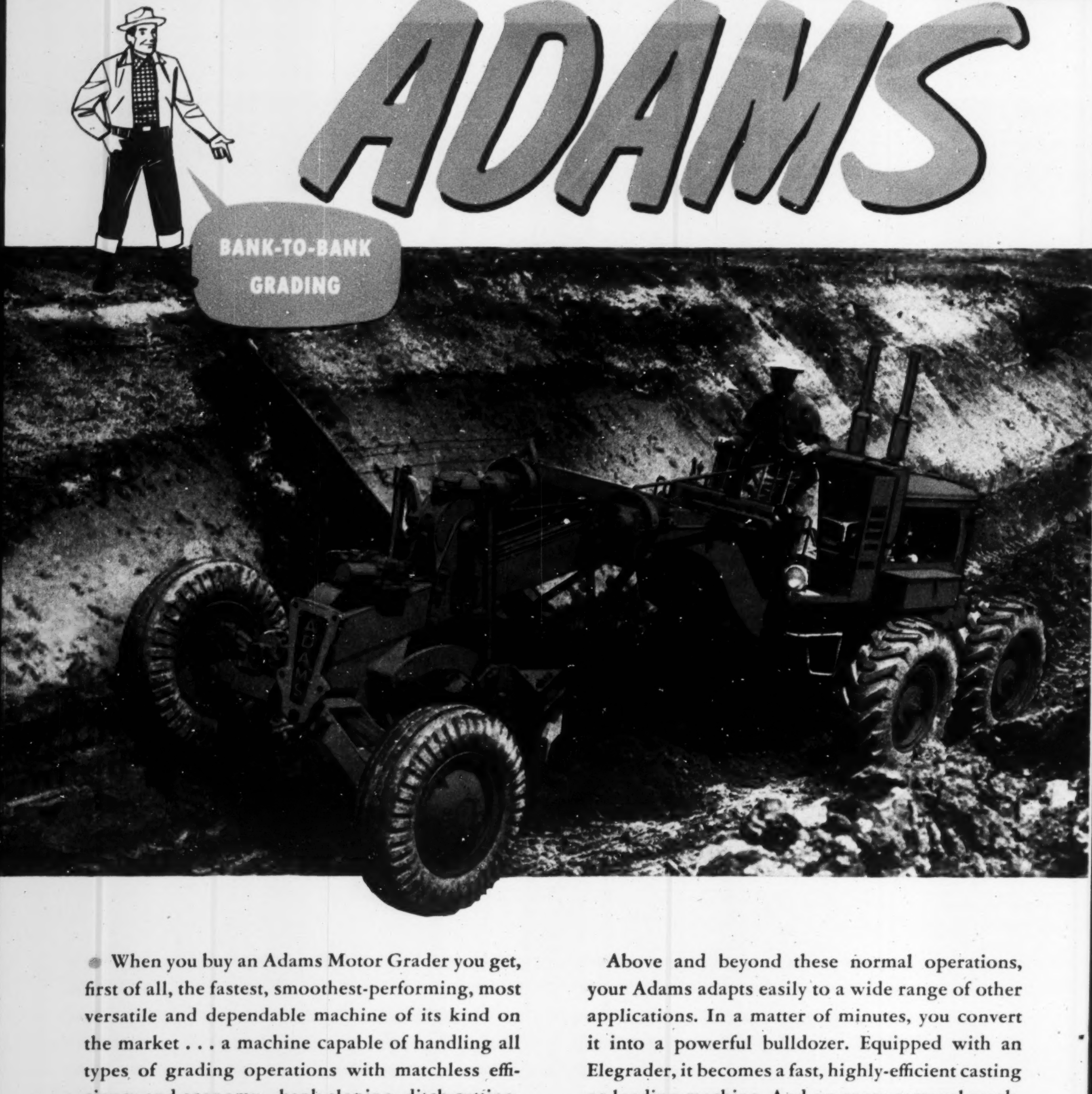
Fabricators and erectors of structural steel for highway and railroad bridges; industrial, office, school, and government buildings; airport structures; harbor facilities.



ADAMS

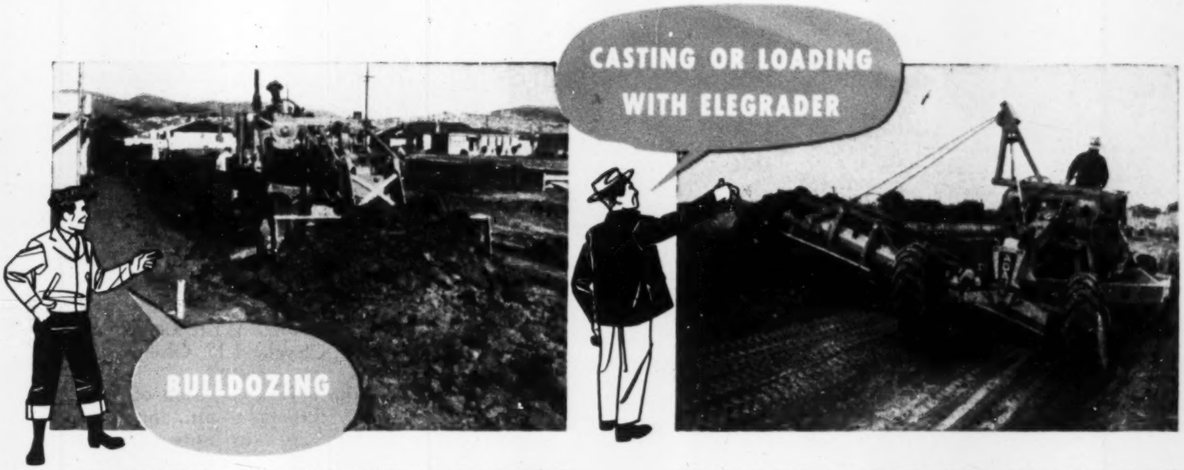
When you buy an Adams Motor Grader you get, first of all, the fastest, smoothest-performing, most versatile and dependable machine of its kind on the market . . . a machine capable of handling all types of grading operations with matchless efficiency and economy—bank sloping, ditch cutting, scarifying, sub-grading, fine finishing, mixing, etc.

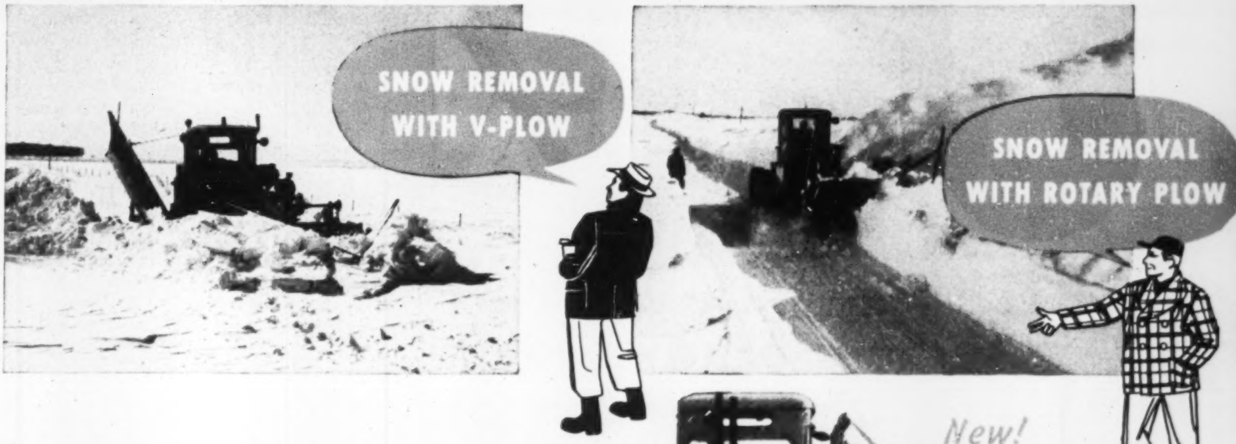
Above and beyond these normal operations, your Adams adapts easily to a wide range of other applications. In a matter of minutes, you convert it into a powerful bulldozer. Equipped with an Elegrader, it becomes a fast, highly-efficient casting or loading machine. And on snow-removal work, your Adams is outstanding—handles everything

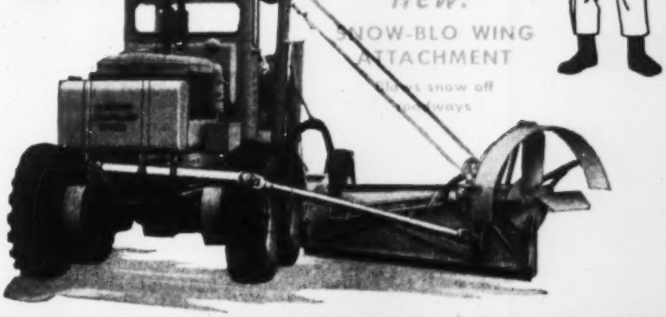
Plus ALL OF THESE BIG OPERATING ADVANTAGES . . .

- **8 Forward Speeds** . . . Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- **Positive Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy steering.
- **Ample Operating Clearances** . . . Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy Servicing Plus World-Wide Dealer Service** . . . Saves time and money—results in less "downtime."

. . . the motor graders of many applications— real all-around, year-around utility


BULLDOZING
CASTING OR LOADING WITH ELEGRADER


SNOW REMOVAL WITH V-PLOW
SNOW REMOVAL WITH ROTARY PLOW


New!
SNOW-BLO WING ATTACHMENT
Blasts snow off roadways

from simple blading of light falls to blasting of deep drifts with powerful rotary equipment.

Yes, your Adams is truly the motor grader of many applications—a machine with real all-around, year-around utility. Let your local Adams dealer help you select the model with the right power and capacity to meet your individual needs.

J. D. ADAMS MANUFACTURING CO. • INDIANAPOLIS, IND.

***Make your next motor grader an* ADAMS**

GRIPS ALL 6 STRANDS

to make wire rope last longer!

1
2
3
4
5
6
This is a cutaway view of an ESCO Long-Bowl Socket showing grip on 6 strands.
Compare to a conventional socket — which grips 3 strands.
1
2
3

ESCO LONG-BOWL® SOCKETS IMPROVE DRAG ROPE LIFE

ESCO LONG-BOWL SOCKETS take wire rope sizes $\frac{1}{2}$" to $2\frac{1}{8}$", develop more than 90% of rope strength. Extra-strong, yet easy to take apart and assemble. No kinking!

When Breaks Occur Due to Uneven Strand Loading

Extensive *ESCO* field and laboratory tests have demonstrated that a major cause of drag line breakage is uneven loading of the rope strands. And the cause of this faulty loading generally lies in a conventional rope socket which barely grips *three* of the six strands! In resocketing this type of break, as much as four feet of *good* rope must be discarded. As a rule, a few breaks make your remaining rope too short for use, and it, too, must be discarded!

With ESCO Long-Bowl Sockets, your drag line gets a chance to wear out — instead of shortening itself into discard! Write today for full details. Ask for Catalog 192.

ESCO

Offices and Warehouses: Honlulu, T. H., Houston, Texas, New York, N. Y., Los Angeles, San Francisco, California; Seattle, Spokane, Washington, Centralia, Pennsylvania, Eugene, Oregon, Salt Lake City, Utah. In Canada: Vancouver, B. C., and Toronto, Ontario.

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2141 N. W. 25TH AVE., PORTLAND 10, ORE. 712 PORTER ST., DANVILLE, ILL.

PUBLICATIONS

Explosive-actuated chopper, one unit of a diverse group, **can sever cleanly bundles of cables** $1\frac{1}{2}$ in. by $2\frac{1}{4}$ in. or fluid lines up to $1\frac{1}{2}$ in. diameter. Labeled Model 174-2-A-1, the blade is driven by 38-caliber propellant cartridges. Explosive is ignited electrically from remote location and safety device prevents premature operation. Maker is **Beckman & Whitley Inc., 994 San Carlos Ave., San Carlos, Calif.**

A 400-amp **insulated electrode holder called the Cooltong** will handle rods from $\frac{1}{8}$ to $\frac{5}{16}$ in. and is guaranteed to stay cool during welding cycles. Holder handle is perforated with large ventilating holes, and manufacturer claims it's unbreakable. Write **Lincoln Electric Co., Cleveland 17, Ohio.**

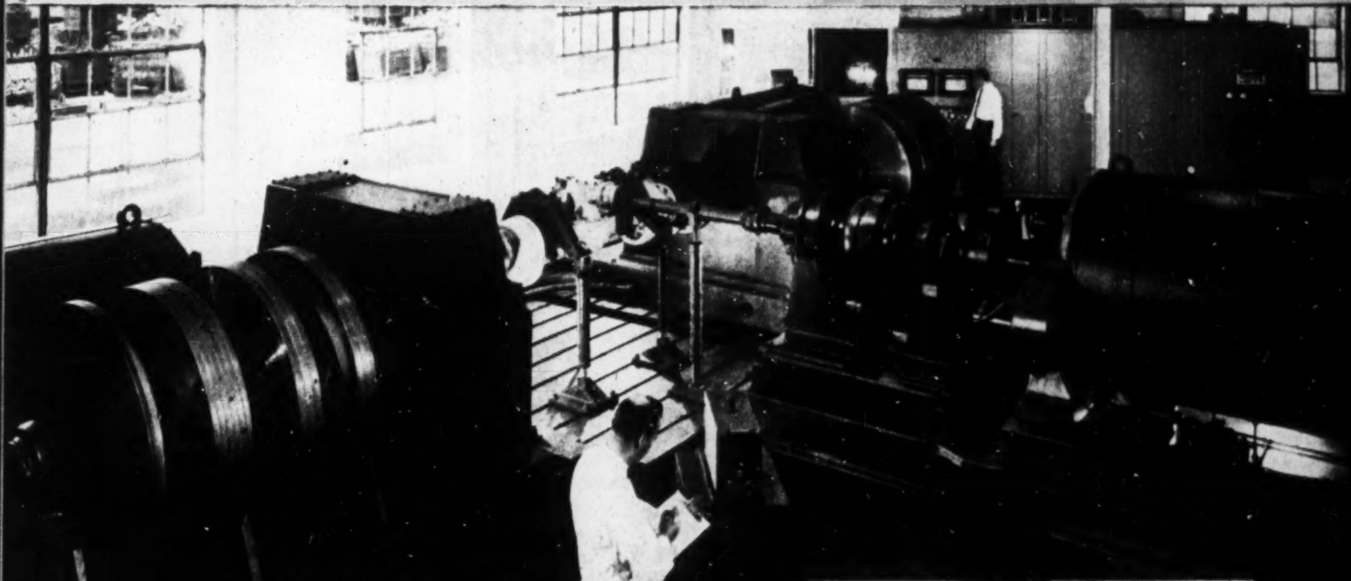
Waterbury Tool, Division of Vickers Inc., Waterbury, Conn., announces a series of **ten heavy-duty variable-delivery hydraulic pumps.** Units have capacities of from 28 to 2,300 gpm; rated speeds; 50 to 4,000 hp; and pressure ranges from 2,000 to 3,000 psi. Applications include winches and hoists, drawbridge lifts, machine drives, etc.

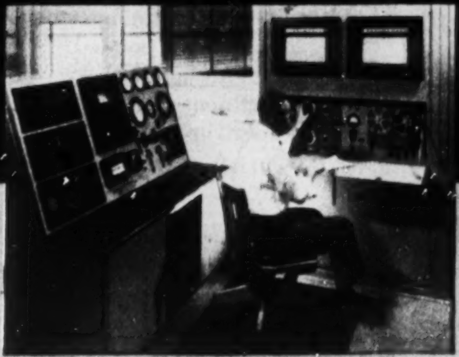
Originally developed for the Navy by **Universal Mfg. & Sales Co., 5211 Pacific Blvd., Huntington Park, Calif., a self-contained paint shop** is now on the market. Set up on a 4-wheel trailer for towing behind a truck, it has a 35-cfm compressor driven by an 8-hp, air-cooled motor. Two 10-gal paint tanks are standard, but may be replaced by 20- or 30-gallon tanks. Air and fluid are carried through 100-ft hoses wound over reels.

The Thoro-Flare **emergency warning signal** is attachable to a barricade by a bolt and lock washer. It requires use of a tool for detaching, thus preventing casual theft or loss. It **starts to flash instantly when put in upright position** but can be turned off by removing from barricade. Neon flasher unit is fired by sealed power pack unit embodying a mercury switch and electronic flasher. Unit measures 8 in. high, 6 in. long and $3\frac{1}{2}$ in. wide. Made by **The Emarco Corp., P. O. Box 615, Far Hills Station, Dayton 9, Ohio,** the flasher weighs only 6 lb.

SAF-I-WELD is the name given a **new welding helmet made from glass fibers by U. S. Safety Service Co., 1215 McGee St., Kansas City, Mo.** A hinge locks helmet in raised or working position.

New Indoor Proving Ground Helps TDA Build The Truck Axles of Tomorrow!





Shown at right is the automatic cycling control which repeatedly subjects the test axle to the same stresses it would receive when negotiating the grade and coasting conditions found in service.

● *A complete indoor proving ground!* That's what this new research laboratory at Timken-Detroit actually is! It enables TDA engineers to test heavy-duty truck axles while simulating the same conditions encountered in the toughest on- or off-highway operation.

Incorporating the largest, most modern dynamometer equipment for testing driving axles, this new laboratory can reproduce truck axle torques and speeds, with the ability to repeat these tests accurately time after time by means of an electronic automatic cycling control. Shock loading tests can also be run which, up to now, have been impractical to reproduce under driving load.

Every time you build or buy a truck with TDA Axles, *you* reap the benefit of Timken-Detroit's long experience and modern facilities. When you see the name TDA on an axle you *know* it's the best-engineered truck axle built!

***PLANTS AT:* Detroit and Jackson, Mich. • Oshkosh, Wis. • Utica, N. Y. • Ashtabula, Kenton and Newark, Ohio • New Castle, Pa.**

The Accepted Standard
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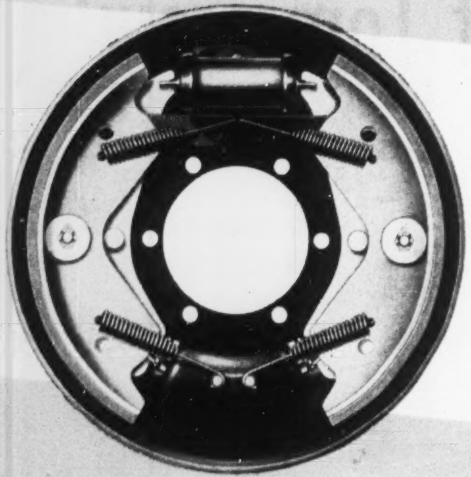

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The new TDA Duplex *balanced* Brakes are the simplest brakes of their type ever designed. Except for a standard straight bore wheel cylinder, there are only eight different parts! Frequency of maintenance and adjustment is markedly reduced. What's more, when either is needed, you can accomplish the job simply, easily and rapidly.

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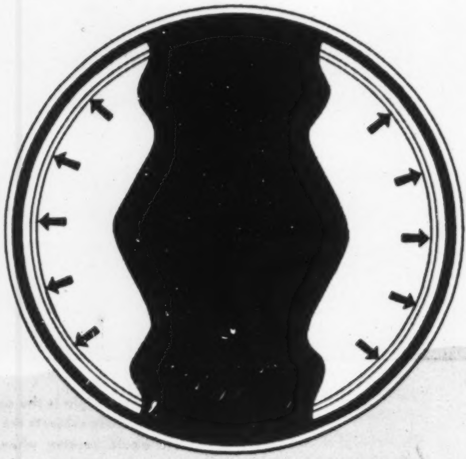
TDA Duplex Brakes are *balanced* brakes! Two floating brake shoes with full-length lining contact the brake drum with *equal* pressure at every point. This eliminates high pressure contact areas—assuring quiet, positive operation at all times under all conditions. The Duplex Brake is equally effective in either forward or reverse directions.



WRITE TODAY FOR AN INFORMATIVE BOOKLET ON TDA DUPLEX BRAKES! IT'S FREE!

TDA Brake Division, Ashtabula, Ohio
Gentlemen:
Please send me immediately more information on your new Duplex Brake.

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BRAKES

TDA BRAKE DIVISION
THE TIMKEN-DETROIT AXLE COMPANY
ASHTABULA, OHIO

India brings in first postwar power from Damodar Valley scheme—by steam

Bokaro station marks the completion of the first project in nation's new power program

When Prime Minister Nehru recently dedicated his country's largest steam power station he was able for the first time to show his countrymen tangible proof that his postwar promises of more food and more power were being kept.

Most of the promises were predicated on the construction of dams that would store water for irrigation and hydroelectric power, making it somewhat paradoxical that the first power is to be generated from steam. Yet this steam station actually is an integral part of one of the river development schemes, firming up the seasonal output of the hydro plants, and in addition using water from one of the new storage reservoirs for its operation.

The Bokaro steam station is one of the projects of the Damodar Valley Authority, which in both organizational setup and development program, is patterned after the American TVA (ENR May 24, 1951 p. 33). But unlike the TVA, which completed its dams first and is only now supplementing them with steam power plants, DVA made its steam station the first order of business. At least it was completed first, although four of the eventual eight dams on the river system have been under construction simultaneously. Failure to complete one of these dams may indeed require the steam station to operate initially at low capacity for lack of water for its boilers and condensers. Indications are, however, that the dam, 12 mi upstream on the Konar River, will be finished late this year, and in the meantime it will have reached a high enough elevation to store some of the monsoon rains, which occur in the four months from June to October.

• Employ Americans—The Bokaro steam station has been designed by American engineers, the Kuljian Corp., of Philadelphia, and this firm also supervised its construction. In addition the structural steel of its frame and all of the equipment is of American manufacture, while an American, A. M. Komora, is chief engineer of DVA. Financed by a World Bank loan of $18.5 million, the station's ultimate 200,000-kw capacity will account for ⅔ of the total of the entire Damodar Valley development. Initially three 50,000-kw units have been installed, and there is provision for a fourth.

Although the station includes no significant innovations, it is the largest in India and of the most modern design in every respect. Located about 200 mi. west of Calcutta, it is situated on the bank of the Bokaro River, just downstream from where that stream is joined by the Konar and just upstream from where the Bokaro flows into the Damodar. As mentioned, the power plant will be supplied with water by an upstream storage dam on the Konar, but there is also a barrage at the plant site to provide a regulating reservoir for the intake.

Since the barrage is 2,700 ft long, a sizable reservoir will be created which will aid in settling out some of the suspended river silt. But to supplement this settling process, particularly necessary in times of floods, the intake channel is also made unusually large and long. It connects with the regulating reservoir at a point 1,200 ft above the plant.

After the water has been used in the plant it is discharged through a tunnel also 1,200 ft long. An unusual feature is that the tunnel has two outlets, one into the river below the barrage for normal use, and another into the regulating reservoir, permitting multiple use of the water at times when the upstream storage supply is low. The plant will require a maximum of 250,000 gpm, which it is thought can be supplied from storage for 9 months of the year. The remainder of the time normal stream flow from the monsoon rains will furnish a more than adequate supply.

The station building dimensions are 170x450 ft in plan, while the highest roof is 118 ft above the foundation. The 85-ft stacks are supported on the roof. An unusual feature of the building is the use of very large downspouts, up to 15 in. in diam, to take care of the runoffs from torrential rains during the monsoon season.

The Bokaro station is equipped with two boilers for each of its turbogenerators. Rated at 300,000 lb per hr, the boilers will turn out steam at 850 psi and 900 deg F temperature. They will be fired from pulverized coal, the raw supply for which comes by aerial ropeway from mines about 5 miles away. Power generated at the station will be stepped up from 13,800 volts to 138,000 volts for transmission. It will be used for the mines and industries in the valley.

Mexico lists construction budget

New national administration plans completion of major construction projects; proposes others

Under the administration of newly-inaugurated President Ruiz Cortines, Mexicans can expect completion of major construction projects now under way, plus added work on secondary projects for utilization of programs already completed, say government officials.

One important work will be started soon, however. This is the Grijalva project in southern Mexico, a TVA-type program that will generate 1,380,000 kw from Grijalva River waters.

Work on Miguel Aleman Dam, principal structure of the Papaloapan project in Vera Cruz, (ENR Oct. 9, '52, p. 34) will be largely completed this year. Said to be the largest dam in Latin America, the project is sufficiently completed to close the dam curtain and diversion tunnel and start water storage. Installation of hydroelectric equipment, that will increase the country's generating capacity by 7%, cost $12 million this year.

• Highway planning—An estimated $42 million has been set aside for highway and federal road construction, principally to connect agricultural centers with consumer areas. An additional $9 million is earmarked for road repair and maintenance. While no new large highway projects have been announced, an extensive highway building program will be carried out to link existing major highways with each other and with adjoining population centers.

Mexico's 1953 budget excludes funds to be spent by the government petroleum monopoly, Pemex, and the National Railways of Mexico, which have their own revenue and operate independently.

Pemex will spend more than $250 million during the next six years to boost production to 460,000 barrels daily. Domestic oil consumption in Mexico is expected to rise 7% a year to reach a net of 221,000 barrels a day in 1959, leaving over 200,000 barrels a day for export, according to Pemex.

The new government has also promised reconstruction of the Mexican Southern Pacific Railway, extending 1,200 mi from Guadalajara to Nogales on the Arizona border.

To start construction on eight new airfields and for maintenance of present fields, the secretary of public works and communications recently allotted $5 million.

Mexico's construction budget will be augmented by more than $11 million in U. S. funds for works along the Mexican border, including completion of Falcon Dam, and the proposed Anzalduas Dam.

South African refinery nears completion

Pile drivers are nearing completion of their main undertaking in the construction of a $15-million Standard-Vacuum Oil Refinery at Durban, South Africa, the first of its kind in that country.

To be completed late this year or in early 1954, the plant will turn out an estimated 200,000,000 gals per year. A further $1.5-million expenditure is planned for an asphalt plant addition, designed to produce 25,000 tons of asphalt a year—equal to 20 percent of South Africa's present requirements.

Emphasis on fuel products such as petrol, illuminating paraffin, power paraffin, automotive diesel oils, industrial diesel, marine diesel and bunker fuel oils is the basic aim of the refinery.

The total gallonage in petrol products will be equivalent to more than one-fifth the overall consumption in South Africa.

To handle incoming crude oils and outgoing processed products, 4½ mi of pipe have been laid from the refinery to the harbor's edge on Durban Bay.

An additional 1,050-ft pipeline has been laid underwater at the mouth of the harbor to fuel ships at main berths on the city side. Requirements of inland traffic have been met by a 2-mi rail track from the refinery to the main south coast lines.

Average depth of piles on the Durban project is between 80 and 90 ft although one pile, said to be the deepest in the country, was driven to a depth of 123 ft under the main plant site.

General contractor is Foster Wheeler Corp., New York.

New Israel highway route links industrial-mining areas

Work started last month on a 23-mile road scheduled to shorten the route from Israel's industrial centers to the recently discovered mining areas which are located in the Dead Sea region.

Linking Beer Sheba and Kurnub, the new road constitutes the second stage of a difficult road building scheme. The first part is a 35.6-mi Kurnub-Sodom road which workers are now finishing.

So far, the project has entailed a

RAFTS FLOAT 1,050-ft pipeline down Durban harbor as construction nears completion on Standard-Vacuum Company's $15-million refinery plant in Durban. Dropped into a channel in the ocean floor, the pipeline will supply fuel and bunker oils from the new refinery to ships berthed on the city side.

COMMENT from the BUTLER ENGINEER

Engineer Stripped to Underwear!

Sub-zero here today. Paradoxically it reminds me of a devilish hot day last summer. I was building a new home. So I order the first load of ready mix for my footings. Thought I had arranged for a couple of men to come out with the transit mix truck to handle the pour. My only job would be to sign the receipt — so I am in business clothes.

In comes the concrete but no men. Obviously we have to pour — right then! For the next two hours I'm busier than a chameleon on Joseph's coat. I guide the spout. I shovel concrete. I puddle it and place the reinforcing. And I do the surface finishing.

First, my coat comes off. Then my shirt. Then my pants. I end up clad only in the lower half of my unmentionables — and even then the sweat pours into the mix so fast it becomes a slurry.

Well, anyway you can't beat concrete batched in a Butler Plant and mixed with sweat from the Butler Engineer. But usually the sweat comes first — before the Plant is built.

1953 will reach a new and higher high in road construction. Think of the immensity of the Ohio Turnpike. 57 contractors on that one job alone. But compared with new highways, relocations and the like, all over the nation, the Turnpike is like an inch to an ell.

All in all, gentlemen, it's a lot of yardage — and a hell of a lot of Butler Plants.

Be seeing you — on those jobs.

The Butler Engineer

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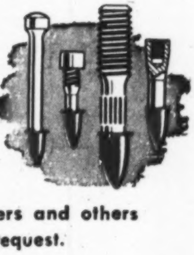

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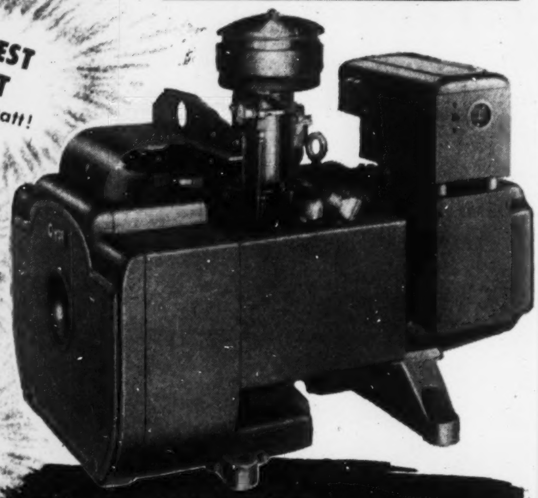

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Both engines are 1800 R.P.M. The 13HP Onan engine which powers the CW-5 and the 20HP Onan engine used for the CW-10 weigh much less than general-purpose engines, and are amazingly compact. Built to deliver dependable, trouble-free service in heavy-duty use. Two-cylinder, alternate-firing design assures smooth, vibration-free power. New, quiet, highly-efficient vacuum air cooling drives out all heated air through *one* side duct. The same duct carries exhaust gases, simplifying installation.

Impulse-coupled, high-tension magneto ignition for quick starting under all conditions. Both models in all standard voltages 60-cycle A.C., single or three phase.

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● Twin-cylinder, horizontally-opposed, air-cooled, alternate-firing engines ● Aluminum-alloy cylinder heads ● Extra-large, replaceable bearings ● Full-pressure lubrication, 6-quart oil capacity, oil filter ● Impulse-coupled, high-tension magneto ignition, radio suppressed ● Quiet, vacuum air-cooling of generator and engine ● Excellent accessibility; snap-off air housings ● High-performance generators ● Completely equipped with controls and instruments.

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$3-million expenditure. That figure is expected to double on completion of the job.

Designed to carry heavy traffic, the 19-ft wide road drops from 1,200 ft above to 1,200 ft below sea level, through rocky mountain passes with cuts of 45 ft and fills of 50-60 ft.

The first large-scale venture in a vast region where authorities plan gradual construction of a network of roads, the highway will allow quick transport of potash products from the Dead Sea works to Tel-Aviv and Haifa.

Vancouver bridge opening set for March, 1954

The new $11-million Granville bridge at Vancouver, B. C., will be ready for traffic in early March of 1954, according to the engineers' latest estimate. Joseph M. Cunningham, spokesman for B. C. Bridge and Dredging Co. Ltd. and the Dawson Wade Co. Ltd., joint builders, said that they have been authorized to go ahead with the entire construction of the bridge.

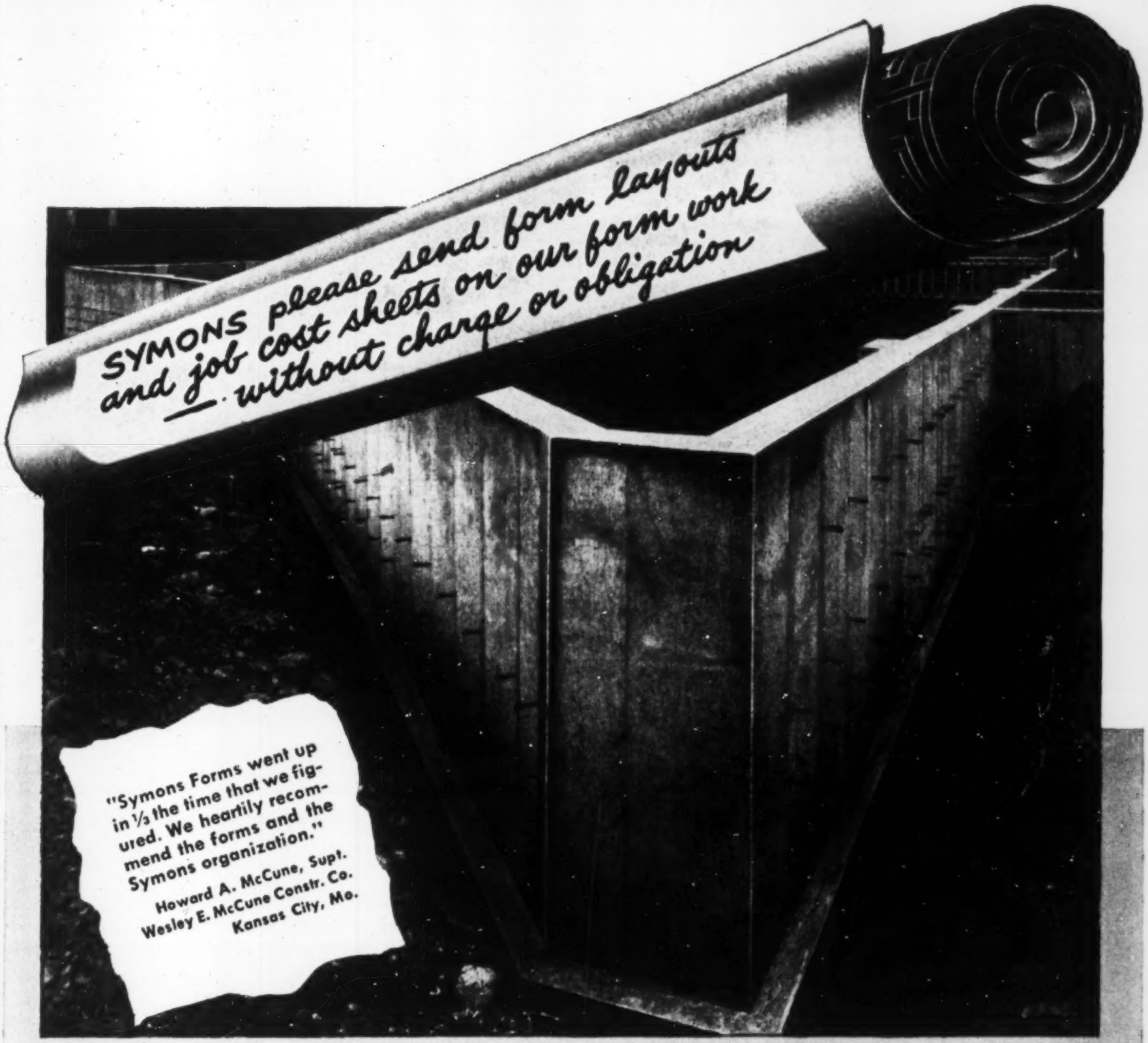
Engineers are concentrating two shifts a day on the first ramp to be finished so that trucks will be able to take loads of structural steel and other materials directly to the main bridge working site. In less than a month there will be a double shift working on the entire project. Work also has been started on the first north side span which will carry the bridge down to the main waterside pier. The only remaining work after March, 1954, will be the traffic cloverleaf systems at each end of the bridge.

World foundation specialists plan August meeting

The Third International Conference on Soil Mechanics and Foundation Engineering will be held in Zurich, Switzerland, starting Aug. 16. Five days of meetings in Zurich will be followed by a four-day tour of Switzerland and a final session in Lausanne. The tour will cover hydro and road projects in the Alps, and will include visits to two dams now under construction—Mauvoisin and Grand Dixence—each of which will be higher than Hoover Dam.

Eight general subjects are to be discussed by the conference: (1) soil properties and classification; (2) laboratory investigations; (3) field investigation techniques; (4) foundations of buildings and dams; (5) piles and pile foundations; (6) roads and airport

(*Continued on page 206*)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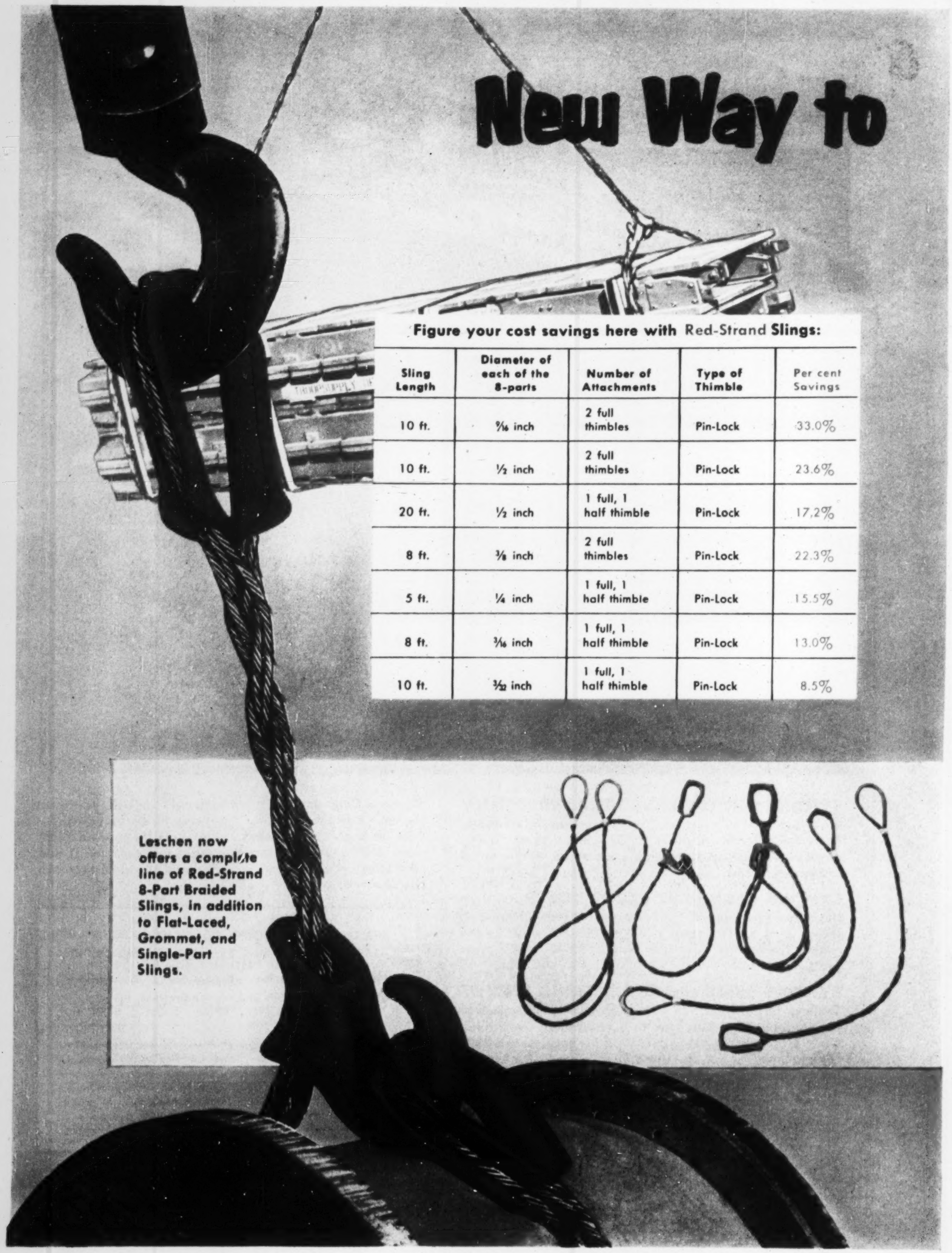

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Sling Length	Diameter of each of the 8-parts	Number of Attachments	Type of Thimble	Per cent Savings
10 ft.	9/16 inch	2 full thimbles	Pin-Lock	33.0%
10 ft.	1/2 inch	2 full thimbles	Pin-Lock	23.6%
20 ft.	1/2 inch	1 full, 1 half thimble	Pin-Lock	17.2%
8 ft.	3/8 inch	2 full thimbles	Pin-Lock	22.3%
5 ft.	1/4 inch	1 full, 1 half thimble	Pin-Lock	15.5%
8 ft.	3/16 inch	1 full, 1 half thimble	Pin-Lock	13.0%
10 ft.	3/32 inch	1 full, 1 half thimble	Pin-Lock	8.5%

Leschen now offers a complete line of Red-Strand 8-Part Braided Slings, in addition to Flat-Laced, Grommet, and Single-Part Slings.

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Leschen's new *Red-Strand* 8-Part Braided Slings with *reusable Pin-Lock Thimble attachments* earn *substantial dollar savings* for you

You reduce costs with Leschen Pin-Lock Thimbles because you use them again and again on Red-Strand Slings. Thimbles normally outlast a series of slings, and Pin-Lock Thimbles have easily removable locking pins—for quick transfer to reordered slings.

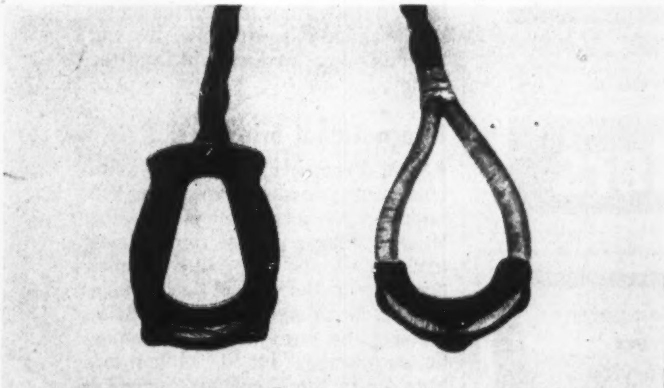
For example, the savings from only one reuse of Pin-Lock Thimbles on a 3/8″ x 8′ 8-part Braided Red-Strand Sling amounts to 22.3%! The per cent is even higher on larger slings. Check the chart and see.

You reduce costs further because Pin-Lock Thimbles guard against unexpected damage to sling loops. These extra heavy, extra durable cast steel thimbles give slings extra protection. And . . .

Improved Quality is a Bonus Benefit

You reduce costs still more, because Red-Strand Slings are made of higher-than-rated quality Leschen wire rope—famous for longer-than-expected service.

Now that Leschen offers a complete sling line—with new money-saving Pin-Lock Thimbles—it pays to satisfy all your wire rope and sling requirements from one source. *Start doing so the next time the need arises.*



New Pin-Lock Thimbles are reusable because they are securely held in position by removable steel pins. Previously used Pin-Lock Thimbles can be easily fitted to replacement Red-Strand Slings, simply by reinstalling them and re-inserting the pins. Pin-Lock Thimbles are made of extra heavy cast steel for longer-than-ordinary service.

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runways; (8) earth pressures on retaining walls and tunnels; and (8) stability and deformation of slopes of earth dams.

Dr. Karl Terzaghi of Harvard University is president of the International Conference and Prof. Donald W. Taylor of M.I.T. is secretary. For the U. S. Committee, A. E. Cummings, director of research, Raymond Concrete Pile Co, New York, is chairman.

All correspondence relative to the conference should be addressed to the General Secretary, Dr. A. von Moos, Gloriastrasse 39, Zurich 6, Switzerland.

Philippines lift taxes on military construction

Contractors working on U. S. military construction in the Philippine Islands received a boost last month as President Quirino ordered several levies on construction goods and service lifted.

Included in the tax relief order were a 17% foreign exchange tax, a 2% import licensing tax on imported materials, a 7% sales tax, a 3% contractors' tax and a variety of documentary stamp fees.

The presidential order applies to goods and services procured locally or obtained from the United States, regardless of whether they are used directly by the U. S. armed services or procured in their behalf by private contractors. Under existing arrangements, only goods and services procured directly from the United States by the armed forces for U. S. bases in the Philippines were exempt from the imposts.

International briefs . . .

• Start Venezuelan canal – Twelve bond issues, totaling more than $48 million, have been authorized by the Venezuelan government for dredging of the Maracaibo Bar. Oil companies operating in the area of Lake Maracaibo will subscribe $22.5 million, covering the first five issues. A preliminary contract for $14 million has been let to the Companie Fomentadora de Venezuela Occidental to dredge Tablazo Bay channel. The contract calls for construction of a channel 35 ft deep and 600 ft wide, to be entirely completed in the 18 months allotted.

• Italian highway building–As part of its highway expansion program, Italy's Ministry of Public Works recently approved plans for two express

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highways involving an estimated expenditure of $46 million. Designed to promote trade with Switzerland and France, the first highway will link the existing Genoa-Serravalle road with Milan, Como and Pont Chiasso. Cost of the four-lane centrally-divided highway is estimated at $30 million. A second expressway, to cost $16 million, will be the first stretch of a proposed line through the Mont Blanc tunnel to France and Switzerland.

• **Propose bus terminal**—Plans for construction of Rome's largest inter-urban motor bus station, to include an underground taxi garage and roof for landing helicopters has been announced in a recent issue of the Italian Road Federation's bulletin. To cost $16 million, the new terminal will feature engineering and repair shops, lodgings for drivers and station staff, restaurants, a 600-bed hotel, plus 3,000 housing units with accommodations for banks, travel agencies and business offices. Helicopters landing on the terminal's roof will connect with city airports and will provide a special tourist excursion service.

• **Million dollar maintenance**—The recently opened Mexico City-Cuernavaca-Iguala expressway will require $1 million a year for maintenance, according to engineers of Constructora del Sur who are in charge of expressway maintenance and operation. Tolls have been running about $4,000 a day, but from this must be taken maintenance and administrative costs ($500,000) plus interest on bonds issued for construction ($500,000) and amortization of the original cost.

British housing rate tops 239,922 units

During 1952, a total of 239,922 permanent houses was built in Great Britain—about 45,000 more than were built in 1951, the government announced this week.

Government sources were inclined to credit the gains to a succession of measures within the last year aimed at freeing the British building industry from controls, and to increase supplies and manufacture of building materials.

A large share of the housing built since the war (something like 1,111,499 units) have been built by governmental and sub-governmental agencies. In December, 1952, for instance, 23,395 units were completed. Of these, 18,486 were built by governmental agencies, 3,942 by private builders.

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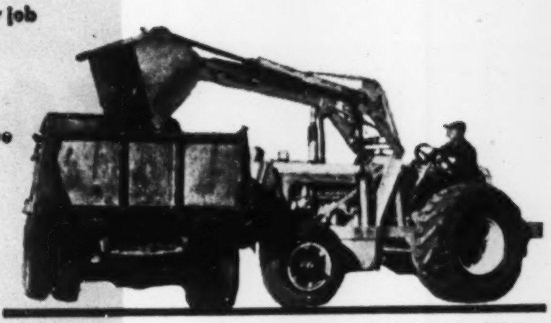

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Let your MM distributor demonstrate. See for yourself why MM owners call their Wheeler and equipment combination the "one man contractors."

MORE WORK from more equipment! MM Wheeler owners get all the advantages of design that make both ends pay — like this 3 yd. scraper.

Provisions for rear mounting give you real back-hoe performance. Again, Wheeler design pays off with more work from standard design.

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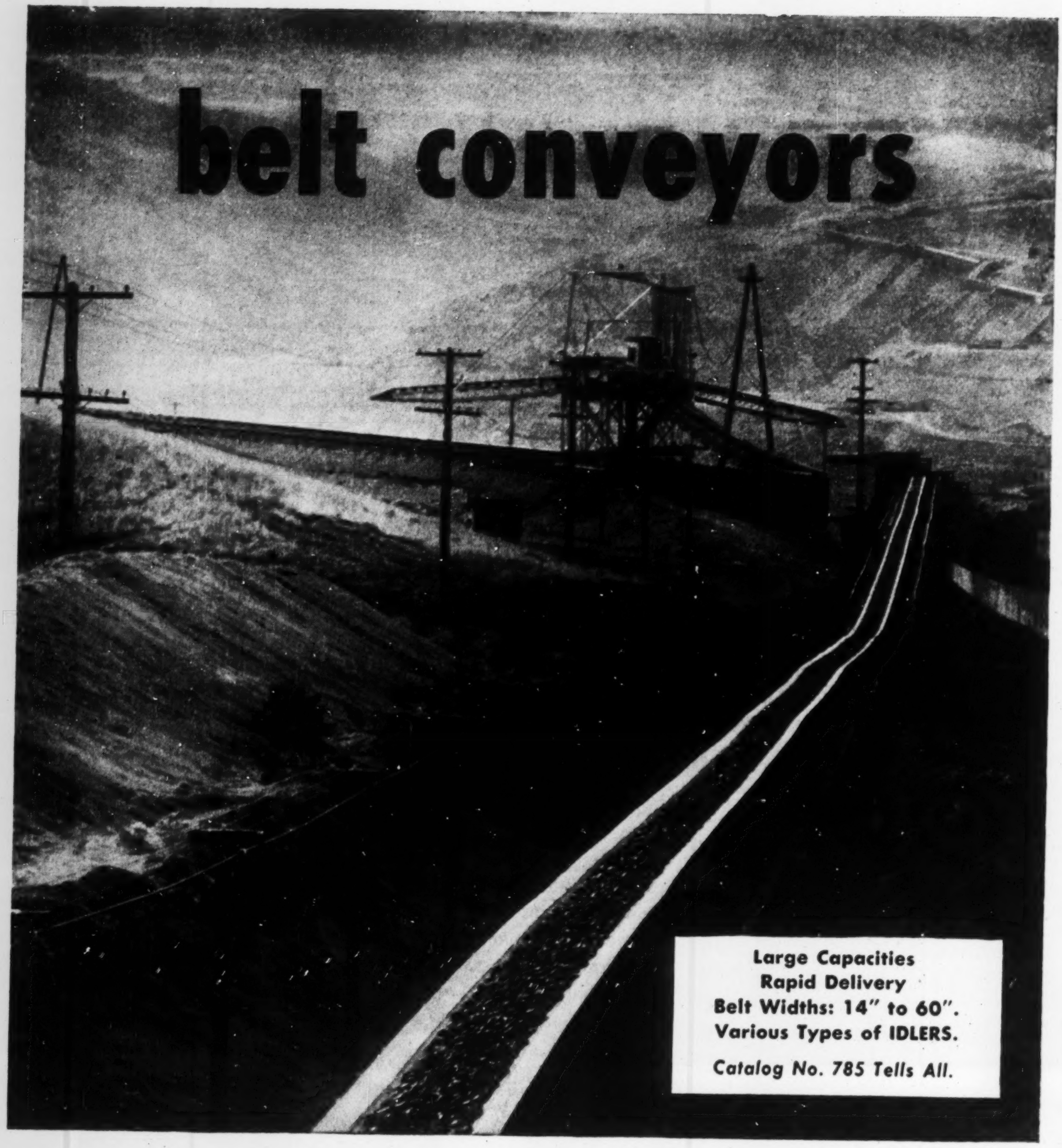

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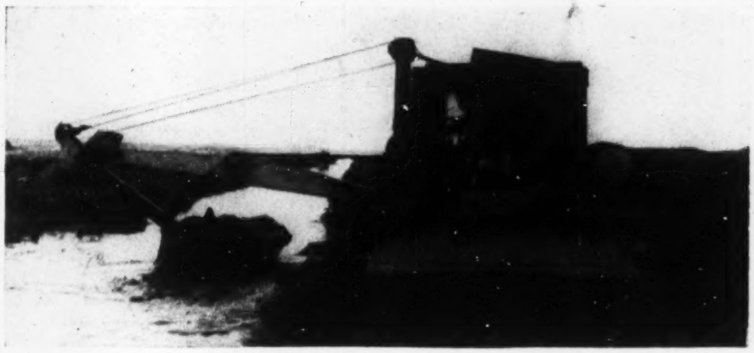
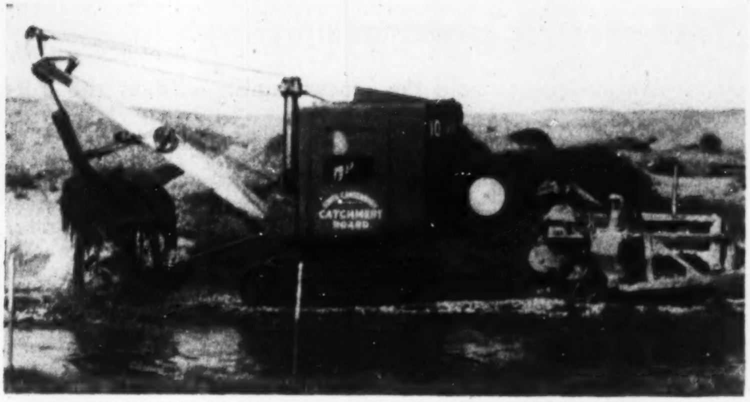
PLANTS IN CANADA, ENGLAND, SOUTH AFRICA

IF IT'S MINED, PROCESSED OR MOVED
. . .IT'S A JOB FOR JEFFREY!

New Zealanders design 10-ft bucket . . .



. . . to use on backhoe for ditchwork . . .



. . . and it's towed along by a tractor

Because of the nature of the terrain, drain maintenance is almost a continuous operation in New Zealand and Australia. Hundreds of miles of irrigation ditches, roadside drains, water races and the like must be cleaned regularly and mechanization has lessened the job considerably. The latest bit of ingenuity was on the part of the South Canterbury Catchment Board in New Zealand whose engineers designed 10-ft-long hinged buckets that are fastened firmly to backhoes.

• Dragline not good enough—Draglines had been used, with 8-ft-wide buckets. These removed weeds and silt but did not disturb rocks and shingle, because of the lack of control on a dragged bucket. By fastening the new models to backhoes, they were rigidly controlled.

Once this rigid system was working well the same engineers became impatient with the slow rate of travel. An operator would have to stop and lock all boom action, then engage driving gears to move ahead for the next bite. At that spot the reverse was true: Travel gears were disconnected and the boom mechanism was set into action once again.

• Can't swing and travel—Simultaneous travel and boom swing is impossible on most machines. Where it is possible, it's impractical.

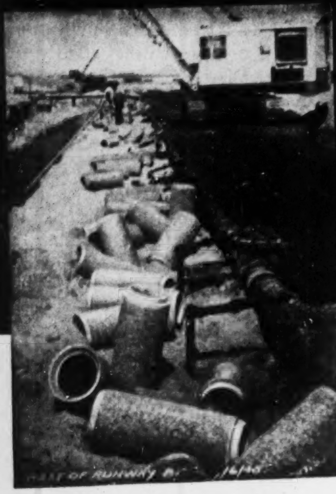
But the New Zealanders merely put the backhoe's travel gears in neutral, fastened it to a tractor with a rigid boom connection and, working as a team, the backhoe operator and tractor operator can now complete six miles of trench in an 8-hour day.

• Backhoe rated at ⅜ yd—The setup shown here consists of a relatively small-sized machine, drawn by a small crawler tractor. The backhoe is rated as a 33-hp , ⅜-yd machine, but the standard 2-ft 3-in. bucket was replaced with the new 10-footer. The Board's chief engineer reports that the rig will clean drains all the way from 8-ft bottom width, 3-ft depth and 1:1 side batter to those with 3-ft bottom width, 6-ft excavated depth and 1:1 side batter.

The 10-ft buckets are hinged at points 2½ ft from either end. They are so arranged that the trip lever is automatically released and the contents dropped when the bucket reaches emptying position. When the load is clear, the bucket automatically swings back and locks itself in digging position again. A hand trip release is attached to the rig for operation whenever needed.

Additional facilities, now on the design boards, are expected to ease the strain on operators and increase working speed by 20 percent. Ultimately a set of three different buckets will be available to cope with all soils and conditions and all buckets will be quickly interchangeable for versatility of application.

FAST, SURE DRAINING
of Ground Water is Vital
to WORLD'S LARGEST
AIRPORT



That's Why Idlewild Depends on
WALKER POROSWALL
RAPID DRAIN PIPE

Efficient and rapid drainage at Idlewild was a major problem — solved by using WALKER POROSWALL as a permanent installation for sub-surface runway drainage. In the words of Carillo & Green Associates, consulting engineers, POROSWALL "lowered the water table to a level beyond our best expectations."

WALKER POROSWALL Rapid Drain Pipe is the fastest drainage medium known. It is porous concrete, extremely permeable throughout its entire circumferential area. There are no open joints or perforations to permit the entrance of dirt. This prevents clogging!

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RAPID DRAIN PIPE
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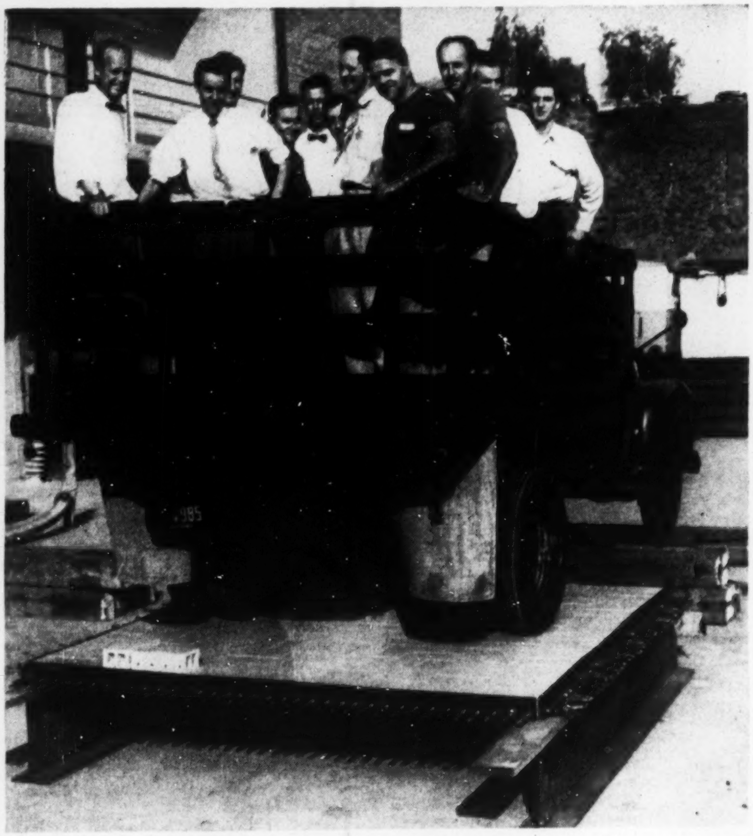
RESEARCH



TESTING THE CAPACITY of a section of prestressed ceramic tile. No mortar is used to keep the tile block units together.

University of California engineers test ceramic prestressing system

Tension cables hold the blocks rigidly without the use of mortar to hold them together

An investigation, at the University of California at Los Angeles, of prestressed ceramics for building construction by F. R. Shanley, and W. J. Knapp, in the department of engineering, has been showing some promising results.

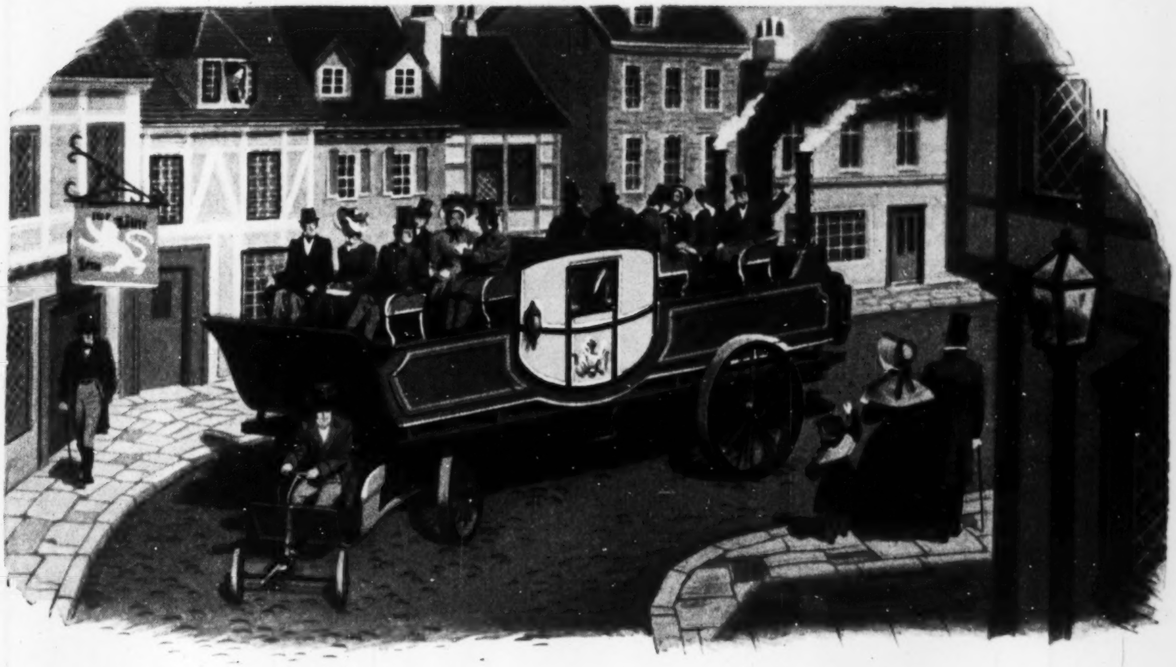
Prestressing by means of steel cables—as has been done in concrete—prevents the ceramic elements from being loaded in tension and permits full utilization of their high compressive strength.

In the laboratory a small, lightweight prestressed beam made up of four 4 x 6 x 12-in. hollow tile blocks supported an 1,800-lb weight on its free end without failure for about a year.

Another phase of the research has been concerned with a large section of tile blocks that could be used either as a wall or a floor. These are held together by pressure exerted on all four sides with tensioned cables running lengthwise and crosswise. Pressure is exerted simply by tightening bolts at both ends.

No mortar is needed to hold the blocks together. The pressure does this. Asbestos gaskets are used between the blocks to help distribute pressure evenly.

Such a wall or floor would need no painting because glazed tile, preprocessed in almost any desirable design or color combination, would be used.



Power Steering was appreciated 125 years ago

This steam coach which appeared in England about 1827 had a type of power steering. The little wheels in front, when turned by the elegant coachman, would act as a pilot to pull the main front wheels around as the vehicle moved. Power derived from the forward motion did most of the work. It is interesting to note that the value of power steering was appreciated more than a century ago.

Modern Vickers Hydraulic Power Steering is appreciated not only by the truck or bus driver, but also by the man who pays the bills. The driver, relieved of all the exhausting work of steering, stays fresh and alert. If driving a truck, he gets more done in a day. If driving a bus, he gets through traffic easier, maintains schedules, and doesn't get a fatigue grouch that repels patronage. Relief from fatigue reduces the accident hazard of any driver.

Get more information on fingertip, easy, dependable Vickers Hydraulic Power Steering. Write for Bulletin 5101.

6169

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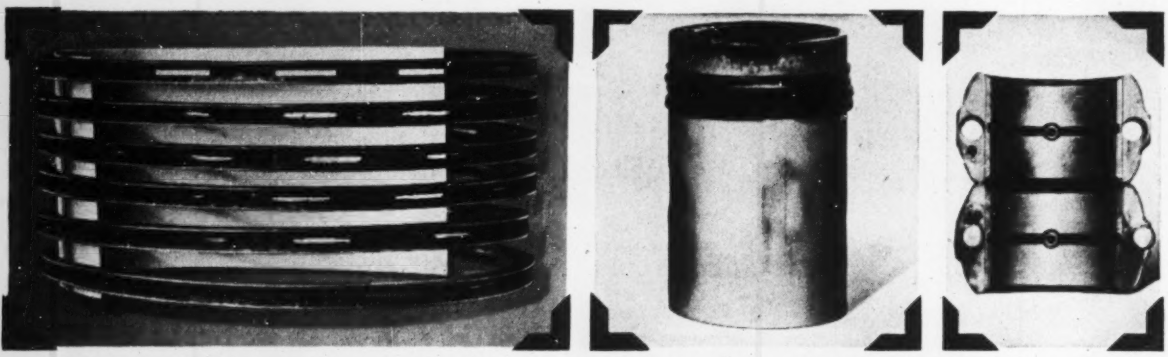
VICKERS hydraulic
POWER STEERING
is Effortless, Positive and Shockless

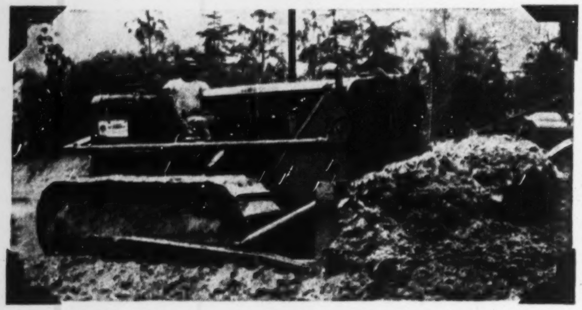
THE ENGINEER'S REPORT

DATA
LUBRICANT RPM Delo Oils
UNIT D-8 Caterpillar
SERVICE Earthmoving contract work
CONDITIONS Heavy loads—dirt, dust
FIRM T.H. Walsh-Argo Engineering Company Los Angeles

Engine parts "like new" after 7721 hours!



THIS SET OF OIL RINGS and the piston and con-rod bearing at right—all from a D-8 Caterpillar using RPM DELO Heavy Duty Lubricating Oil—appear just as they did when removed after 7721 hours of earthmoving work. There were no broken or stuck rings; the oil-return holes were open; all parts were free from deposits. The crankshaft was not more than 0.001 inch out of round at any point and was reinstalled.



THE D-8 "CAT" above is the one from which the parts came. It is one of 11 large diesel tractors operated by the T. H. Walsh-Argo Engineering Co., Los Angeles. By using RPM DELO Oils, the company regularly gets 5000 or more hours between overhauls.

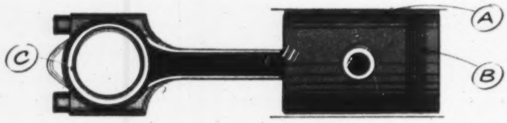
NOW...
You can cut engine wear rate as much as 85%

FREE BOOKLET on the RPM DELO Oils gives you complete information on how to meet any heavy-duty engine operating condition with one of these oils. Write or ask for it today.

RPM DELO LUBRICATING OILS

TRADEMARK "RPM DELO" REG. U.S. PAT. OFF.

How RPM DELO Oils reduce wear, corrosion, oxidation in all Heavy-Duty Engines



A. Contain special additives that provide metal-adhesion qualities...protect parts whether hot or cold, running or idle.

B. Anti-oxidant resists deterioration of oil and formation of lacquer...prevents ring-sticking. Detergent keeps parts clean...helps prevent piston scuffing.

C. Special compounds stop corrosion of any bearing metal and foaming in crankcase.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your nearest distributor handling them, write or call any of the companies listed below.

STANDARD OIL COMPANY OF CALIFORNIA • San Francisco 20
THE CALIFORNIA OIL COMPANY • Barber, New Jersey
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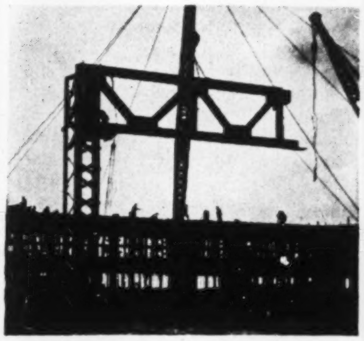
THE QUONSET HUTS left on Guam by World War II forces were in sorry shape when the outbreak of the Korean War created a fresh quarters problem on the island. The abandoned huts were open to the weather, almost inaccessible in the thick vegetation, damaged by time and neglect.

In answer to the problem came the solution of Capt. John Alderman, former chief of staff, Fleet Air, Guam.

When the jungle and undergrowth had been cleared, work began on repairing hut foundations, with concrete blocks to provide unobstructed basic ventilation. Sheet metal overheads and bulkheads were repaired or replaced, and plywood decking was installed. End bulkheads, designed for maximum ventilation against the tropical climate, were louvered, screened, and provided with canvas drops. Windows were installed, three on a side, fitted with "eyebrows" to keep out heavy rains and glare.

Tuffy® SLINGS
Fight off Kinking!



"Couldn't Kink Them Even When We Tried"
Says Owner of an Eastern Construction Company
(Name on Request)

This Pennsylvania construction company owner also proved to himself that Tuffy Slings are extra flexible, extra strong. Tuffy's patented 9 part machine-braided wire fabric construction gives you a fabric that can be repeatedly bent around abrupt corners. And even when one of the strands is broken or cut, there's no stranding! Give your workmen an easy-to-handle tool that eases and speeds the handling of loads . . . can help you save up to 40% on sling costs. Get Tuffy Slings!

Get Your FREE Sling Handbook
Contains plenty of factual, useful data on 12 braided sling types. The only handbook of its kind, and it's yours for the asking!

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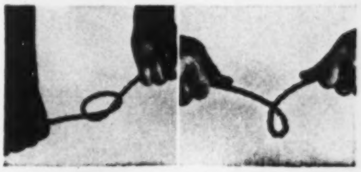
Tuffy®
Lasts Longer Under Stresses From Knots & Kinks



Tuffy
Braided Construction
SLINGS

Knot it! Kink it--if you can! See how easily the patented braided construction of Tuffy Slings straightens out without damage. Only Tuffy gives you this extra flexibility and long-life strength—because *only Tuffy* has this 9 part machine-braided wire fabric construction that fights off knots and kinks, yet stands up longer when such stresses of distortion happen. Mail coupon below for your FREE 3-ft. sample of Tuffy Sling fabric and test it yourself!

Get Your FREE Sling Handbook
New! Complete! Factual, useful data that can help you cut sling costs!

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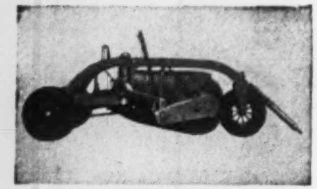
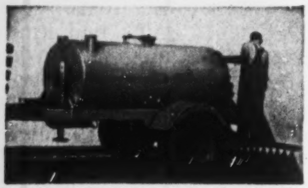
GRACE
Asphalt and Compaction Equipment



3 sweeper models, axle, engine or tractor powered.

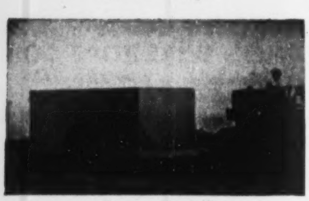
Chip spreaders 8′ to 12′ width. Also asphaltic concrete spreaders.

Rapid Fire circulating heaters heat and unload large tanks of asphalt.



Rapidspray Maintenance Distributors. Also heaters for production melting of barreled asphalt.

Sheepsfoot Rollers
250 to 600 psi.



Pneumatic rollers
7 to 50 tons.

W. E. GRACE MFG. CO.
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LEGAL

Contractor not responsible for improper specifications

The prime contractor of a construction project sublet the painting work to another contractor. The subcontract provided that the painting work was to be performed pursuant to the plans and specifications of the prime contract covering this part of the work.

The subcontractor completed his part of the work and thereafter assigned all sums due under his contract to the Puget Sound National Bank. About six months after the work was completed, the owners of the building claimed that the painting work was unsatisfactory. The balance allegedly due the subcontractor was $19,959. The general contractor having refused to pay the balance due the subcontractor, the bank to which the money had been assigned brought the action to recover the same.[1]

The defendant interposed the defense that the painting work was unsatisfactory and that upon the refusal of the subcontractor to remedy the defects, the prime contractor had the same corrected by another contractor at a cost of $8,810, and asked to have this sum offset against the amount which was claimed by subcontractor's assignee.

The subcontractor claimed that he had performed the work pursuant to the plans and specifications, and that whatever defects appeared in the work resulted from faulty plans and specifications and through no fault of his. In fact, there was no contention that the subcontractor had failed to comply with the specifications, nor was there any claim that the paint had not been properly applied. The prime contractor contended that the painting contractor should have known that the painting job would have been unsatisfactory even if it had been performed pursuant to the specifications.

The trial court granted the subcontractor a judgment for the full amount claimed to be due the painting contractor, which judgment was affirmed on appeal.

The appellate court in its opinion stated: "The general propositions of law submitted by the appellant to the effect that a subcontractor is bound by the contract of the original contractor with the owner, where the specifications are made a part of the contract, and the subcontractor is bound by the conditions and specifications contained in the original contract, are rules well recognized.

"The contract in question provided that the painting job should be done to the full and complete satisfaction of certain specified persons. This means satisfaction to a reasonable person. By the terms of the contract, the owner or others were not entitled to additional or further work not specified in the subcontracts. . . . Further, Saxon's [subcontractor's] work was not shown to be unsatisfactory because of any failure or neglect to perform."

The court in its opinion further stated: "A contractor is required to follow the plans and specifications and when he does so, he cannot be held to guarantee that the work as required by his contract will be free from defects, or withstand the action of the elements, or that the completed job will accomplish the purpose intended. He is only responsible for improper workmanship or other faults, or defects resulting from his failure to perform."

(1) Puget Sound National Bank v C. B. Lauch Const. Co., 245 P. 2d 800, Supreme Court of Idaho, June 18, 1952.

Delays resulting from defective specifications

A contract was entered into for the doing of some paving work on a government airport. The work of grading the site of the work and installing the necessary drainage system was awarded to another contractor. During the performance of the grading contracts, the contractor doing that part of the work called to the attention of the government's engineers that the drainage system called for by the plans and specifications was insufficient and suggested that certain changes be made in the work. The government's engineers insisted that the contractor proceed and complete the work pursuant to the plans and specifications. It became apparent that some changes would have to be made in the drainage system.

The paving contractor had his men and equipment on the job ready to proceed with his part of the work. By reason of the changes that were made in the drainage system, the paving contractor was forced to keep his men and equipment idle and brought an action[1] to recover the damages so sustained. The contractor was allowed a recovery, the court, stating:

"Where a contractor suffers damage on account of faulty specifications, he is entitled to recover." The court in its opinion cited many cases to sustain its conclusion.

(1) Warren Bros. Roads Co. v United States, 105 F. Supp. 826, U.S. Court of Claims, June 1952.

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the OLIVER Model "B" Crawler

WITH WARE LOADER

Long considered the finest tractor-loader combination in its class, the Oliver-Ware Model "B" is now built for even greater performance. There are now 5 lower track wheels instead of 4, and the front idler wheel is considerably larger. This means you get more track on the ground, greater stability, more traction, easier handling all the way around. It means faster loading cycles, more work done per day, lower costs and more profits for you.

You still get the hydraulically-controlled Ware loader—designed and built exclusively for the Oliver Model "B" Crawler. 110° bucket rotation and 28° "tilt back" give you a full bucket every time. Bucket level is automatically maintained when lifting load, preventing wasteful spillage. You can control speed of discharge. And, even with the "tilt back" action, you still have a 32° (from vertical) dump angle . . . a control range no other loader can surpass.

For complete information on how the Oliver-Ware Model "B" tractor loader can cut costs for you, see or write your Oliver Industrial Distributor.

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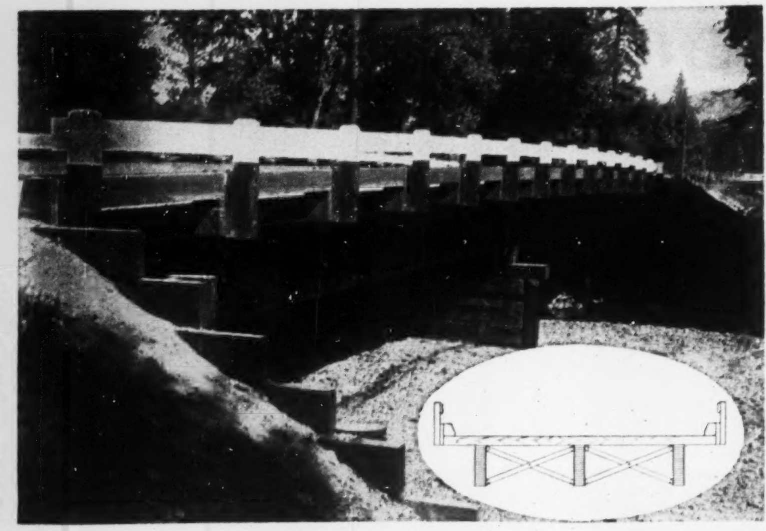
A complete line of industrial wheel and crawler tractors



92-foot girder bridge of two 46-foot spans designed for H-15 and S-12 loading. Roadway is 20 feet clear width. Three glulam girders support decking of transverse laminated planking. For heavier loading four girders are used.

Permanent Girder Bridges

...built at low cost through engineered timber construction

This bridge is an illustrated lesson in true long-time economy. It combines moderate initial cost with a minimum service life of 40 years, during which maintenance will be negligible.

The glulam girders which carry the load are formed of kiln dried timber, bonded together with waterproof glue which is as strong and permanent as the wood. They are dimensionally stable in every way, and stay in place without adjustment or maintenance.

Preservative treatment gives lasting protection against attack by weather or insects. Girders do not need painting or other care. Paint usually is applied to guard rails to improve appearance and visibility, though not required for durability.

Other standard bridges of Timber Structures, Inc. include arch deck, bowstring chord truss, parallel chord truss and composite deck types. Detailed information on these various types is contained in the folder, "Permanent Timber Bridges", a copy of which will be given you upon request. See your nearest Timber Structures office, or use the coupon.

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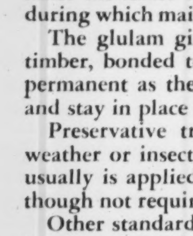

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LOUIS E. WOLFSON new president of Merritt-Chapman & Scott.

New heads elected for Merritt-Chapman & Scott

Louis E. Wolfson, board chairman, was elected president last week of Merritt-Chapman & Scott Corporation, and Ralph E. DeSimone, former president and a director, was named board chairman of M-C&S Overseas, Inc., with responsibility for the planning and development of construction operations outside the United States.

The organizational changes had been made in anticipation of a continuing increase in the volume and scope of the company's construction operations abroad. These include a paper mill in Israel; an airbase in Canada, in association with one other contractor; additional facilities at the Kindley Air Force Base, Bermuda; and a four-berth ocean freight terminal at Auckland, New Zealand, a joint venture in association with two other contractors.

Mahony-Troast celebrate quarter-century milestone

Mahony-Troast Construction Co. of Clifton, N. J., celebrated its 25th anniversary Feb 9. The company had its beginning in 1928 when Paul L. Troast and Arthur S. Mahony set up shop in a Passaic insurance office. Building for industry and commerce only, Mahony-Troast expanded rapidly and soon had a branch office in Philadelphia in addition to new offices in Passaic.

In 1933, Arthur Mahony, vice-president and general manager, died.

Paul Troast, faced with a depression which closed down many older firms, guided the company through, intact and stronger than ever.

Projects have been undertaken ranging from thousand-dollar local jobs to multimillion-dollar construction in both the East and the Mid-West.

These jobs have included manufacturing buildings for all kinds of industrial operations in addition to various institutional and utility buildings and numerous alterations and extensions.

The company received two Army-Navy "E"'s during the war for the Bayonne Naval Base and the Wright Aeronautical Plant No. 7.

Name committee chairman for industrial sanitation

Lt. Col. Alvin F. Meyer, Jr., has been named chairman of the Committee on Industrial Sanitation of the American Public Health Association. Formerly, he was deputy for environmental health engineering in the office of the air surgeon at Air Materiel Command headquarters, Wright-Patterson AFB, Ohio.

Lt. Col. Meyer, a graduate of Virginia Military Institute, served with the Air Force in Europe for 28 months during World War II. A licensed professional engineer, he is a member of various civilian and military engineering and medical societies, and co-author of "The USAF Physician-Engineering Team", a paper appearing in the December issue of "The Military Surgeon".

College trusteeship given to Kaiser executive

Clay P. Bedford, engineer and executive with the Henry J. Kaiser enterprises, has been elected a member of the board of trustees of Rensselaer Polytechnic Institute.

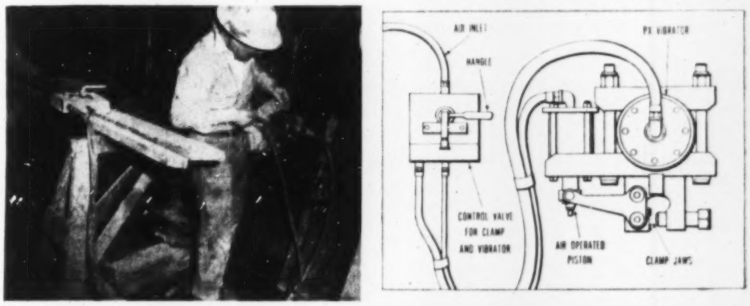
Bedford joined Kaiser on graduation from RPI in 1925. He has worked on the construction of Boulder, Bonneville and the Grand Coulee dams, and he built and operated four Kaiser shipyards in California during World War II.

President and director of the Chase Aircraft Co. since last May, when he left a post as special assistant to the Director of Defense Mobilization and the Secretary of Defense, Bedford is a vice-president of Henry J. Kaiser Co., Kaiser-Frazer Export Corp., K-F Sales Corp. and Midland Co.

VIBER EXTERNAL VIBRATORS with quick-acting mounting clamps prove very effective in producing unusually smooth concrete tunnel linings.

Form Vibration Speeds Tunnel Lining, Gives Better Concrete, Smoother Finish

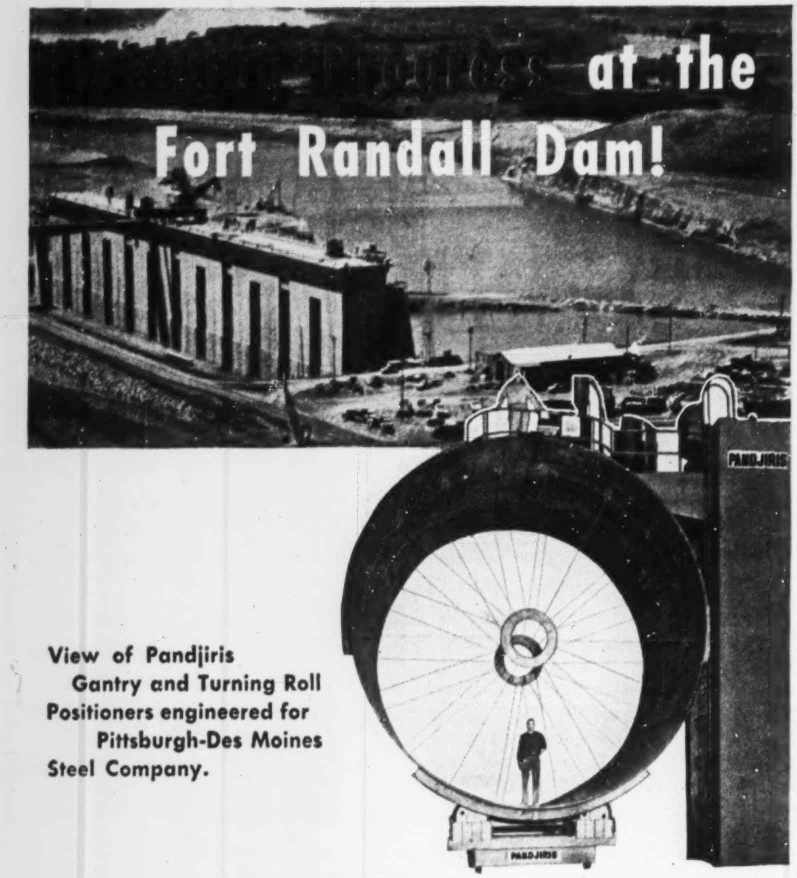
Tunnel lining contractors now use VIBER external vibration on movable steel forms to speed production of denser, more uniform concrete and a finished surface almost as perfect as the form itself. This gives maximum capacity with minimum frictional losses in diversion tunnels, storm drains, or other water-carrying structures. Generally one vibrator is clamped on each side of the steel form (which transmits the vibration) at a height convenient for clamping and moving as work progresses. One USBR project engineer reported transmission of vibration "throughout length of the slope—20 to 25 feet." Vibrators clamped near upper end of the advancing slope may be turned on briefly to help settling while concrete is deposited, after which a vibrating time of ten to forty seconds, depending on conditions, will consolidate it and produce the surface required.



AIR-OPERATED MOUNTING CLAMP and operating valve provide a quick and convenient means of clamping the external vibrator on the form wherever a plate or angle is accessible. Valve (left) turns the vibrator on and off, and operates the air piston to provide a clamping force of 1800 pounds on the adjustable jaws.

UNLOADING BULK CEMENT is one of many other successful applications of external vibration. One large oil well cementing company uses vibration to unload bulk cement in over fifty plants, some handling as much as 500,000 sacks per month. If you handle or package bulk materials, you can probably use external vibration to good advantage.

EXTERNAL VIBRATION is another field in which VIBER has pioneered in its continuing search for new knowledge and techniques in the useful application of vibration. For further information on VIBER'S complete line of internal and external vibrators, write your nearest authorized distributor or VIBER COMPANY, 726 South Flower St., Burbank, California. Dept. 53



View of Pandjiris Gantry and Turning Roll Positioners engineered for Pittsburgh-Des Moines Steel Company.

due to *Weldmore* Equipment . . .

revolutionary strides have been accomplished in welding operations at the Fort Randall Dam at Pickstown, South Dakota . . . for instance, the Pandjiris Weldmore Gantry and Turning Roll Positioners, especially developed for Pittsburgh-Des Moines Steel Company. Penstocks in diameter to 24½ feet, and weights up to 100,000 lbs. are automatically positioned for both longitudinal and circumferential welds . . . thus providing high speed, automatic submerged melt welding, 60 to 100 times faster than hand electrodes.

Yes, Pandjiris Weldmore Engineered Positioning Equipment is playing an important part in the progress of the Fort Randall Dam construction.

Write for informative Bulletins No. EE-10 and EP-12, covering every major construction welding operation.

PANDJIRIS WELDMENT CO.

5151 NORTHRUP — ST. LOUIS 10, MO.

**WELDING POSITIONERS — TURNING ROLLS — HEAD & TAILSTOCK POSITIONERS
WELDING GANTRIES — WALL TRACK PLANOGRAPH WELD ARMS — TANK JIGS
TUBE BENDERS — HYDRAULIC COIL MANDRELS — SPECIAL POWER WELD TOOLS**

Cooper Union alumni honor William Goldsmith

Alumni of Cooper Union last Saturday honored William Goldsmith, former Commissioner of Public Works in Yonkers, N. Y., and president of the Woodcrest Construction Co., at the alumni association's Founder's Day dinner.

Goldsmith, Class of '05 and chairman of the Cooper Union Alumni Fund since 1951, received a plaque for his fund-raising activities. His hard work and diligence in the campaign have resulted in a 40% increase in annual voluntary membership contributions.

A three-week fund drive directed by Goldsmith produced twice the necessary amount of money for construction of a dam at Cooper Union's Green Engineering Camp. The school's engineering camp is located in the Ramapo Mountains of New Jersey and New York.

Since 1905, Goldsmith has been active in municipal, state and federal public works projects. As U.S. district engineer in the Philippines, he was awarded first prize for development of the best road system in the islands.

While a construction and public works engineer for New York City, he constructed the Canal Street sewage treatment plant and pumping station.

Among contracts awarded to the Woodcrest Construction Co.—the firm which Goldsmith founded in 1928 and of which he is now president—were those for Floyd Bennett Field, the Manhattan approach to the Queens Midtown Tunnel and for large sections of New York City's independent subway system and the Triborough Bridge.

Irwin E. Burks leaves Folsom Dam position

Irwin E. Burks, office engineer at California's Folsom Dam project, retired last month after having been connected for 23 years with the Corps of Engineers.

Formerly a resident engineer at Englebright and North Fork American River Dams in California, Burks was an engineer on the Chute a Caron Dam in Quebec, and in the Panama Canal Zone.

A graduate of Drury University in Springfield, Mo., Burks later spent two years as Associate Professor of Engineering Methods at New Mexico College of Agriculture and Mechanical Arts.

OBITUARIES

Arthur O. Ridgway, 82, for 56 years an employee of the Denver & Rio Grande Western R.R. and its retired chief engineer, died in Denver Jan. 18. He was an 1892 graduate of the University of Kansas. He retired in 1948.

James E. Bryan, 55, president of the Bryan Rock and Sand Company at Raleigh, N. C., died Feb. 5.

John J. Turnbull, 68, office engineer with the city engineering department at Asheville, N. C., with which he had been connected for 45 years, died Feb. 5.

Frank C. Schroeder, 69, a retired civil engineer, died in Dallas, Tex., Feb. 2. He was a graduate of the University of Wisconsin. In 1916 he went with the Wisconsin Electric Electric Power Co. in Milwaukee, and in 1935 became building engineer for the firm. He retired in 1949.

James R. Edmunds, Jr., 62, Baltimore, Md., architect, died there Feb. 4. He had served as president of the American Institute of Architects in 1945 and was chairman of the Construction Advisory Council of the U. S. in 1948 and 1949.

Marvin Furr Hartsfield, 39, Harriman, Tenn., a civil engineer with the Tennessee Valley Authority, Kingston Steam Plant, Kingston, Tenn., died Jan. 14. He received his Bachelor of Science degree in civil engineering at the University of Mississippi in 1937.

Edward E. Reed, 68, a former project engineer for the New Jersey State Highway Department, died in Trenton Feb. 1. Reed, who retired in 1951 after 42 years service with the department, helped to pioneer many of New Jersey's major traffic arteries. He began his career as assistant supervisor of the New Jersey Department of Public Roads, later the state Highway Department. At one time he served as assistant state highway engineer.

Samuel J. Sutherland, 51, chief of the construction division of the school board of Milwaukee, Wis., died there Jan. 24. A graduate of the University of Minnesota architectural engineering school, he joined the school board's architectural staff in 1927 and was named construction division head in 1951. He was responsible for the board's design and specifications in its stepped-up building program.

107 ton roof skeleton rises with slipform 99 ft. in 9 days and nights, with 126 jacks and 2 operators

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Inside view of roof skeleton

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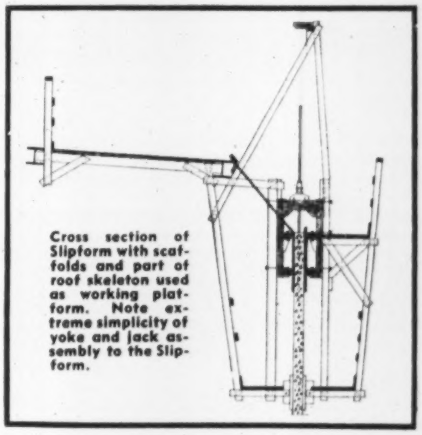

Cross section of Slipform with scaffolds and part of roof skeleton used as working platform. Note extreme simplicity of yoke and jack assembly to the Slipform.

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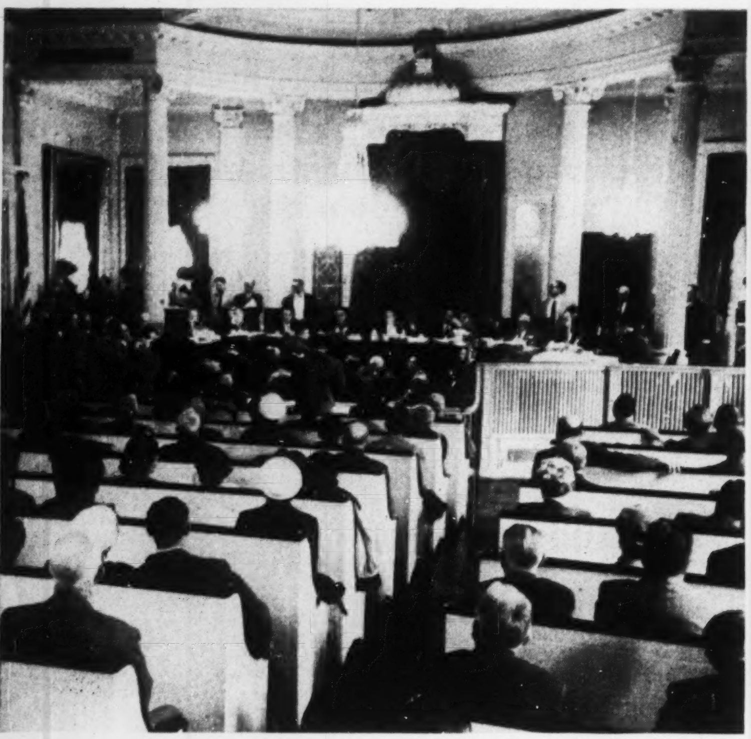


HEARING on passage of a resolution requiring bid, performance, and labor and material bonds on all future construction contracts with the city of New York.

FOR resolution (left to right, top row): Donald E. Chafey; S. C. Levine, A. R.

New York City falls into line, requires contract bonds

The Board of Estimate votes 11 to 5 to require bid, performance and payment bonds on contracts

OPPOSED to passage of the resolution was Rudolph Halley, council president.

The Board of Estimate of New York City, after a lapse of almost 20 years, once again has made bonding a requirement for contractors who bid on and perform city department work.

By its action the board acknowledged the new status of surety companies in New York City, repudiated the ancient scandals found by the late Fiorello La Guardia's reform administration, and heeded the pleas of its top administrative engineers.

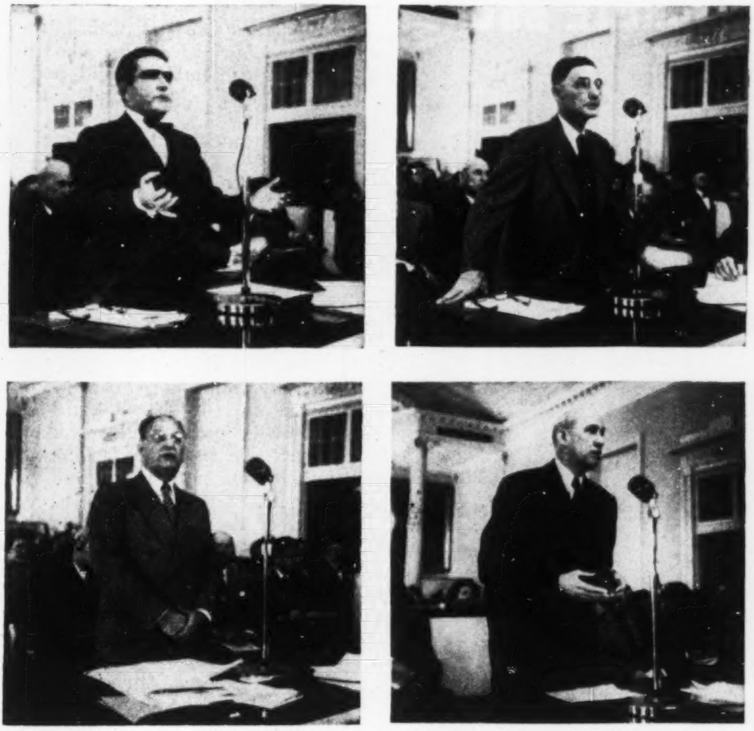
New York City's departments were almost the last big government agencies not requiring bid, performance and payment bonds. At the board's hearing it was pointed out that, "The United States Government, many municipalities, and virtually all states require the use of performance bonds, as do the Board of Transportation, Triborough Bridge and Tunnel Authority, New York City Housing Authority and the Port of New York Authority."

Two of the biggest contracting departments of the city—Department of Public Works and Board of Education—sent top administrative engineers to plead for the use of bonds.

Other interested groups also sent representatives to plead before the board for the passage of the resolution.

• **Association's plea**—Speaking for the Commerce & Industry Association of New York, Inc., Donald E. Chafey made these four points favoring the use of such bonds:

- That many other governmental agencies use them and are satisfied that they are necessary.
- That the deposit monies now required by those city departments that do not require bonds add to the cost of a contract because the contractor charges interest on deposit money.
- That because use of bonds frees a contractor's liquid capital, the number and quality of bidders for public contracts would be improved.



D'Aleo; (bottom row): Public Works Commissioner Frederick Zurmuhlen; Congressman A. J. Multer; J. P. Riley, construction coordinator. (ENR photos by Compton)

- The city and the contractor's suppliers would both be protected by the bonds.

Also speaking for the same association, S. Charles Levine added that most contractors want the bonds to be required because it "makes for a healthier business."

• **Suppliers' story**—A representative of the suppliers of materials to the city's contractors—A. R. D'Aleo, vice-president of Lehman Sewer Pipe Co.—said that in making a price for jobs not covered by payment bonds, which guarantee the supplier's payments, the added risk factor adds about 10% to the price. This 10% is passed on to the city by the contractor, he said.

D'Aleo also mentioned the capital-consuming factor in the existing deposit system. (Most city departments required 2 to 5% of the estimated project cost to be deposited with bid.)

• **Zurmuhlen in favor**—The Commissioner of the Department of Public Works—one of the city's largest contracting agencies—Frederick Zurmuhlen spoke in favor of the resolution.

His reason: "At least 95% of other cities require such bonds," he said. The bonds will insure that every job will be completed, because each material supplier will be assured of getting his money and each sub-contractor of payment in the event of failure by the prime contractor, he added.

Zurmuhlen read a letter into the record from George Dandrow, president of the New York Building Congress, which said: "Unanimously in favor of surety bonds. Bonds will be of advantage to city and to contractors."

• **Surety companies**—Congressman Abraham J. Multer, of New York City, attorney for the Association of Casualty and Surety Companies, spoke for the resolution at some length. He was aided by various insurance company experts who advised him on statistics.

Congressman Multer read a list of favoring companies and organizations, entering the contents of their letter in the record.

He then gave the board a resume of what they could expect from the various bonds:

- Bid bond assures that the successful low bidder will sign the contract.
- Performance bond assures the city that the project will be completed in accordance with the terms of the contract, with the surety companies liable for financial support limited only by the face value of the bond at any stage of construction.
- Payment bond assures all suppliers (and sub-contractors) of payments without the legal entanglement of mechanics' liens.

• **Board of Education**—Speaking for the Board of Education was Construction Coordinator John P. Riley, who drew upon his construction experience in the New York City Housing Authority and other large enterprises to point out that present-day construction depends upon a "chain of contractors" and that the whole project will break down upon failure of the weakest sub-contractor in the chain.

Riley also testified that, in his opinion, pre-qualifying of bidders was an essential for efficient operations.

• **Halley dissents**—Rudolph Halley, president of the city council, after questioning most witnesses sharply, declared his opposition to the pending measure.

It was his belief that the measure would not save the city money and that the old scandalous situation (when four politically-connected insurance brokers were found to do most of the city's bond business) should not be given a chance to recur.

Halley dismissed the evidence of the engineers and insurance men as representing intangibles with no visible balance sheet gains.

• **Passage**—At this point in the hearing, Mayor Vincent Impellitteri introduced the opinion of the corporation counsel of the city.

The counsel stated it as his opinion that the board should require performance bonds under the mandate of the administrative code and that the use of the various bonds suggested by the Commissioner of Public Works would result in both net savings to the city and better contract performance.

Moreover, the counsel gave it as his opinion, that the deposit system was in conflict with the administrative code.

The members of the Board of Estimate—five borough presidents, president of the council, the mayor, the comptroller—were polled and the measure passed 11 to 5. (Halley, with 3 votes, and the borough president of Manhattan, with 2 votes, voted no.)

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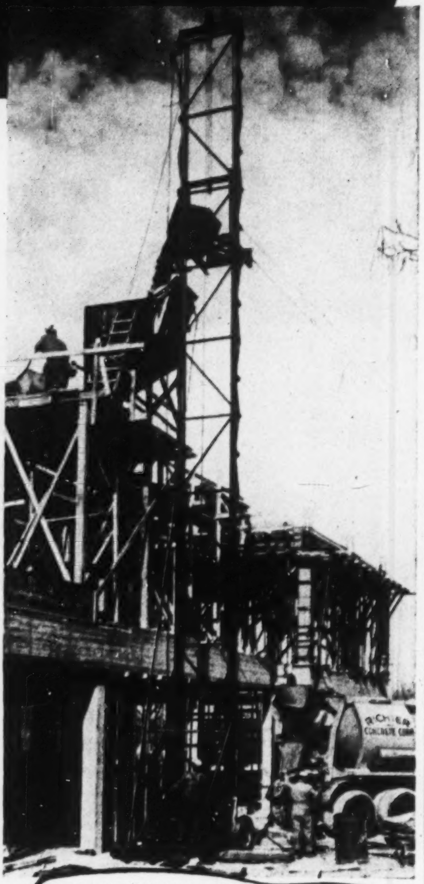

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Oakland Airport improvement awaits voters' approval

Voters at Oakland, Calif., at a city election April 21 will be asked to approve a $10-million bond issue for improvements at Oakland Municipal Airport.

The general obligation bond issue would provide $3.5 million for construction of a new terminal building and furnishings, roadways, parking areas and accessories. Other projects would include: paving apron areas adjacent to the building, new taxiways and widening and strengthening old ones, $3.5 million; widening, lengthening and strengthening existing main east-west runway, $1.7 million; main highway connection for the new terminal to the Eastshore Freeway, $350,000; preparation of additional hangar sites and other facilities, $1.15 million; and purchase of land and/or air rights, $200,000.

All of the proposed improvements, which actually will cost some $10.4 million, come under the master plan of the port of Oakland.

Action also will be sought on charter amendments affecting the port and the airport, which will give the Board of Port Commissioners authority to issue revenue bonds for harbor and airport purposes; allow the port to enter into 50-year leases with industrial firms on port property instead of the present 25-year limitation; and exempt certain harbor and airport personnel from civil service.

Paseo Bridge at Kansas City to be opened in April, 1954

April 28, 1954, has been set as the opening date of the new $16-million Paseo Bridge at Kansas City, Mo., under construction across the Missouri River. The bridge is to be the main northern access across the river from the north into Kansas City proper.

Construction of the fourth river pier of the five planned for the new toll-span project began this week. Work is already well under way on three other piers.

The opening date was announced by R. N. Bergendoff, of Howard-Needles-Tammen & Bergendoff, at the engineering firm's office in Kansas City.

Pier construction alone is costing more than $2 million and at this time is about two weeks behind schedule. The piers are expected to be finished in August. Bad weather was given as the cause of the delay, but the schedule is expected to be regained in about six weeks.

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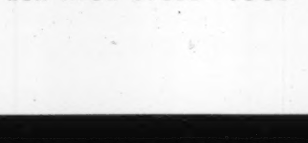

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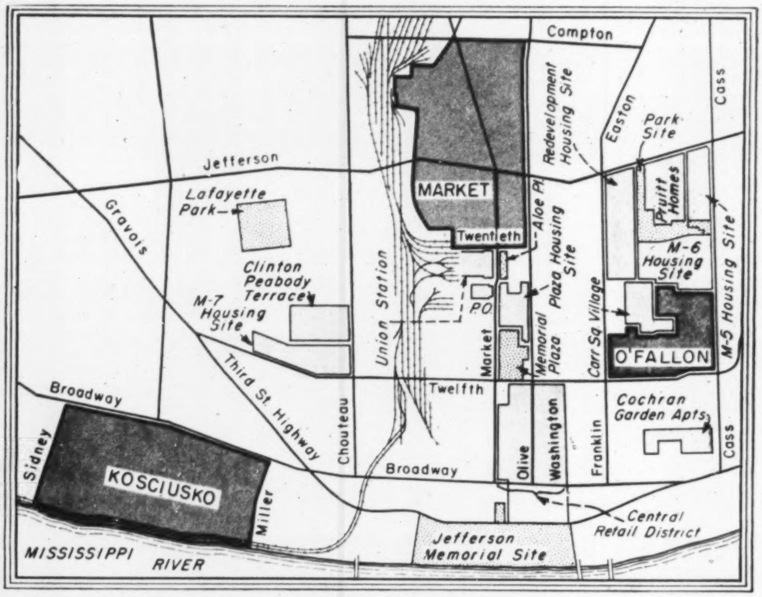
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Easton
Park Site
Cass
Jefferson
Lafayette Park
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MARKET
Pruitt Homes
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Aloe Pl.
Plaza Housing Site
M-6 Housing Site
M-5 Housing Site
Clinton Peabody Terrace
M-7 Housing Site
Union Station
PO
Carr Sq Village
Market
Memorial Plaza
O'FALLON
Third St. Highway
Broadway
Twelfth
Cochran Garden Apts.
Sidney
KOSCIUSKO
Chouteau
Olive
Washington
Franklin
Cass
Broadway
Miller
Central Retail District
Jefferson Memorial Site
MISSISSIPPI RIVER

REDEVELOPMENT is proposed for these three shaded areas in downtown St. Louis.

St. Louis slum-clearing planned

Three pilot areas are selected by committee to show how the plan would work in practice

A plan to clear slums in the heart of St. Louis, Mo., to make room for industrial expansion within the city and to attempt to check the trend of industry to the suburbs was announced last week.

The proposal was made by Paul W. Lashly, chairman of the City Plan Commission's industrial and commercial redevelopment committee. The plan could make use of slum clearance and urban redevelopment provisions of the 1949 Federal Housing Act to help finance a series of projects, or else it could be financed wholly by private redevelopers.

• **Plan**—Dilapidated dwellings would be torn down and the tenants relocated.

Many of the secondary streets and alleys would be eliminated, while a number of thoroughfares would be widened. Small city blocks would be combined into "superblocks."

Land would be assembled into tracts large enough to accommodate plants that conduct all operations on a single level and which require ample space for storage, shipping docks and off-street parking.

After being cleared, a tract would be resold at a reduced price. As an added inducement, firms would be offered reductions in property taxes over a period of 25 years.

To show how the plan would work, the redevelopment committee has selected three pilot areas and has outlined their rehabilitation.

The Kosciusko Street area, covering about 40 square blocks, is south of the downtown business district. The O'Fallon Street area comprises about 20 square blocks north of the business district. The Market Street area takes in about 75 square blocks west of the central shopping district.

• **Mounting concern**—The redevelopment plan reflects mounting concern over the movement of industry out of the city. Firms needing to expand find little vacant ground left in the city's industrial area of eight square miles.

Terming the situation as one of "land paralysis," the committee stresses results that may ensue—industries move away, new industries are discouraged, urban decay is accelerated and the city loses taxes and population.

The agency for rehabilitation might be an organization such as the Urban Redevelopment Corp. of St. Louis, set up two years ago to clear slums for new middle-income tenant housing. This agency has made rehabilitation of the Plaza District, just west of the downtown section, its first project.

Or the agency might be an association of industries already in the area selected for redevelopment. Individual firms also might undertake development of smaller areas.

Federal grants could be used to defray two-thirds of the cost of the entire operation of clearing a blighted residential area, the committee says. The city would bear the remaining third.

• **Missouri act**—Under tax-reduction incentives in the Missouri Urban Rehabilitation Act, an urban redevelopment corporation pays state and city property taxes on the land alone, regardless of improvements, for the first 10 years of its operation. Taxes are based on assessed valuation of the land for the year preceding its acquisition.

For the next 15 years, both land and improvements are taxed, but the assessment may not exceed one-half of what the property actually is worth.

Lashly termed the proposed changes a realignment of residential, commercial and industrial uses of city acreage, asserting there would be no reduction of housing in the net result.

Municipal briefs . . .

• **Norfolk's 5-year plan**—A five-year program for major capital improvements at Norfolk, Va., has been proposed by City Manager H. H. George. Under George's plan, an outlay of $21.5 million would go to 34 projects including new schools, underpasses, civic center buildings, and street and sewer improvements.

• **Pollution aids**—Improvement in water quality in the Kingsport, Tenn., area since the December closure of Boone Dam was reported last week by the Tennessee Valley Authority. TVA said that recent tests show a material reduction in bacterial concentrations, and believed this to be a direct result of the detention of water in the reservoir, allowing bacteria to die from natural causes.

• **Small contract policy**—New York State construction projects involving expenditures of more than $15,000 will be done by contract, according to State Department of Public Works officials. The announcement came as a result of meetings between department officials and AFL leaders following strikes which hit state projects in the Hudson Valley last summer.

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LABOR

Care needed in wage renegotiation

WSC Chairman Killingworth says that terms of contracts passed by WSC must stand despite end of controls

CHARLES C. KILLINGWORTH warned contractors and unions on wage renegotiation.

Neither labor unions nor contractors have the legal right to reopen contracts solely because wage controls have ended. This opinion was offered last week by Charles C. Killingworth, chairman of the Wage Stabilization Commission.

Killingworth's comment apparently was aimed in the general direction of the AFL's George Meany who had said earlier that construction unions would insist on reopening of wage contracts as soon as controls ended (ENR Feb. 12, p. 29).

Where WSC has—by final action—modified or denied an increase in a labor-management agreement, neither side now has any legal right to reopen the contract on that basis, Killingworth said.

But the WSC chairman admitted there is nothing to prevent employers and unions from bargaining voluntarily on anything they choose. And, if both sides agree, a contract can be renegotiated at any time.

• **Situations ahead**—First serious wage pressure will come in the construction industry this spring. There will be precedent for this pressure:

During 1952, the Construction Industry Stabilization Commission allowed wages to rise 15 cents an hour—about 6%—while the cost of living was going up less than 1%.

Large contractors probably will resist excessive wage increases in area union scales. But the industry question mark is the speculative builder. In many cases, speculative builders—and some others—will be bidding for scarce skilled building trades workers, offering wages above union scales.

There was some of this going on under wage controls, as indicated by the fact that most of the recorded wage violations occurred in construction. In times of active construction—and scarce skilled labor—union scales are meaningless, some builders assert.

Increased compensation proposed in 26 states

Increased workmen's compensation benefits were proposed in bills submitted to the legislatures of at least 26 states last month.

Boosts in weekly compensation pay, as well as in hospital, medical, dependency and funeral allotments made up the bulk of the proposed measures and are listed in the accompanying table.

In addition, measures drawn up in some states aimed at more effective administration and at minor changes in existing benefit regulations.

Here is a rundown of proposed legislation:

• In Colorado, occupational disease law changes would give courts the responsibility to determine whether an illness is the result of employment conditions where the disease is unlisted in state laws. Another bill would reduce the waiting period before payment from 30 days to one week and prohibit payments for partial disability when a worker can continue on the job.

• All occupational diseases or infections, rather than specified diseases as at present, would be made compensable under a pending Idaho bill. Also pending in Idaho is a proposal to place responsibility for accidents due to unsafe equipment upon employers and to remove from existing law provisions exempting employers from personal lawsuits in accident cases.

• To speed handling of workmen's compensation cases, a bill before the

PROPOSED COMPENSATION BENEFITS FOR WORKMEN

State	Weekly benefits	Other benefits
California	$40	—
Colorado	—	Raise employers' liabilities on medical-hospital services to $1,000; funeral services to $150
Connecticut	$40	—
Idaho	$50	Raise burial allowance to $350; widows' compensation to $14,000
Iowa	$30	—
Maryland	$40	Total benefits raised to $12,000 plus $2 per week dependents' allowance
Massachusetts	$35	Increase dependency allowance to $5 per week.
Montana	$35	Increase funeral benefits to $300; maximum medical to $1,500
New Jersey	$50	$5 weekly payment per dependent; $30 weekly benefit for deaths
North Dakota	$54.50	Allowance of from $15 to $25 for family whose breadwinner is taking vocational rehabilitation training
Pennsylvania	$35	—
South Carolina	$35	—
South Dakota	$30	Increase maximum death benefits to $7,500
Tennessee	—	Death benefits up to $10,000
Texas	$40	—
Utah	$25	—
West Virginia	$40	Increase minimum ceiling to $25

Maryland legislature would increase membership of the state's industrial accident commission to five.

- Massachusetts workmen's compensation would be handled through a state fund rather than by private insurance companies under a proposal backed by labor unions in the state.
- New York's legislature is flooded with bills to liberalize and broaden the state's workmen's compensation laws. Meanwhile, employers are seeking a legislative change to bring them relief from what they claim are excessive costs under the present program. One industry-backed proposal would permit appeals on issues of fact to be taken from any decision of the state workmen's compensation board to the Appellate Division of the State Supreme Court.
- Ohio's Governor Lausche asked lawmakers for legislation authorizing workers suffering from occupational diseases to appeal directly to courts as do other workmen.
- Bills proposed in both Oklahoma and Montana would bring occupational diseases under existing compensation laws. Dependents in temporary total disability cases would receive an increased amount under pending legislation in North Dakota.
- In Rhode Island, an interim committee set up to study workmen's compensation laws in the state was asked by Governor Roberts to bring up to date its recommendations of last year which included a proposal for establishment of a two-judge industrial accidents court. This court would initially hear disputed compensation cases without waiting for them to go through state labor department hearings as at present.
- Revision of South Carolina's benefit laws to provide that records of the state industrial commission's awards "should be open to inspection just as are the records of all courts," was recommended by Governor Byrnes.

Ohio A-plant strike ended by four-point plan

The two-week-long strike by electrical workers at the A-plant site in Pike County, Ohio, ended recently in an abrupt fashion.

Milton Staub, vice-president of the Gustav Hirsch Co., of Columbus, said the workers accepted a four-point plan submitted by the Wage Stabilization Board. (Before WSB's dissolution by executive order.)

The plan:

(Continued on page 228)

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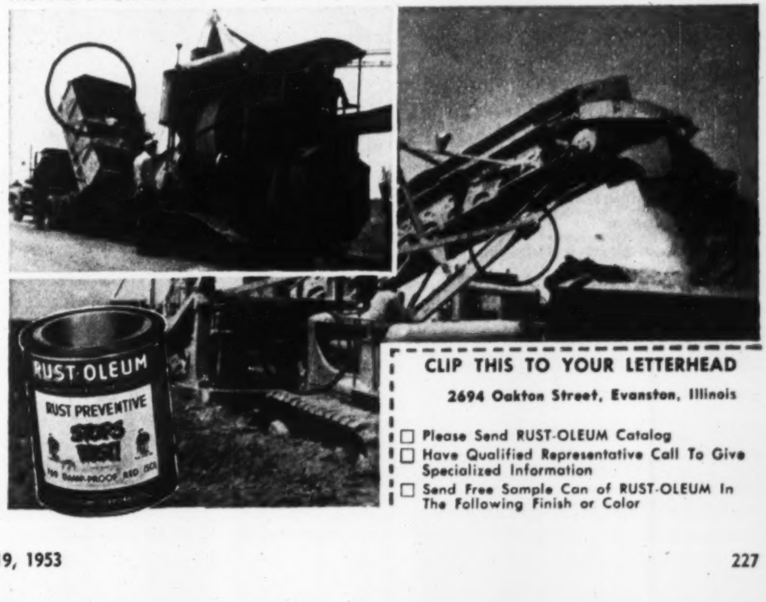

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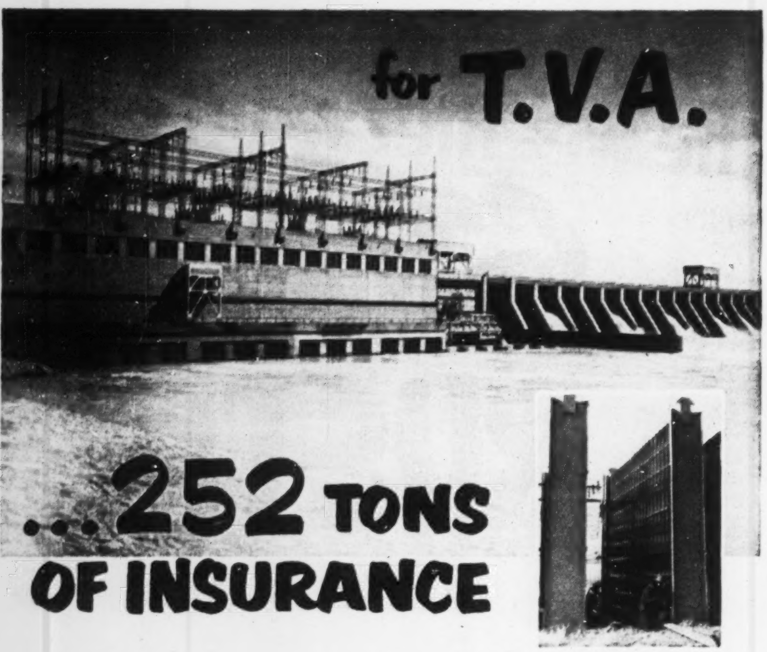

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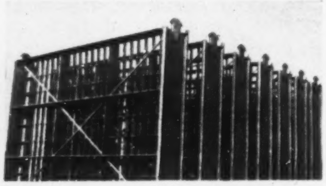

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- Approved payment of eight hours' pay for seven hours' work on the second and third shifts.
- Approved telephone line and cable construction by union contractors. The General Telephone Corp. had been employing non-union workmen. Also it was agreed that the utility will install and maintain its own switchboard and equipment.

• **Oversight**—Staub indicated that the walkout occurred because the WSB had allowed all union employees except electrical workers travel pay between Portsmouth and the Pike County plant.

The end of the strike did not mean the end of the electricians' protests. According to Staub they want $2 a day travel pay, which they claim is paid to workers in 16 other trades.

AFL council maps labor law changes

The AFL Executive Council, meeting in Miami Beach last week, announced it would fight for at least 20 major changes in the Taft-Hartley law, but refused to make public the proposed demands.

Before adjourning, the 15-man council mapped out amendments to be presented to House and Senate labor committees later this spring.

By the publicity ban imposed on the report, the council apparently hoped to gain a bargaining advantage when AFL President George Meany's proposals are presented in Congress later this spring. The report includes

Quick change

The AFL executives' midwinter meeting, aimed to change labor policies on a national level, effected an immediate change in one construction project in the Miami Beach, Fla., area.

Council leaders, flying in for the conference, saw the $5-million Eastern Air Lines maintenance hangar under construction at International Airport.

Sheet Metal Workers President Robert Byron asked, "Are we in on that?" The union's local agent said, "No."

Result: Iron workers had to abandon their jobs erecting sheet steel corrugated siding and let the sheet metal workers take over. A work stoppage was averted, but the project was slowed while sheet metal men took over.

answers to a questionnaire sent to leaders of most of the AFL's 110 affiliated unions.

• **Predicted changes**—Sources close to the council predicted that these would be the outstanding demands to be made by the AFL.

- The right to engage in some secondary boycotts, such as those involving struck work, where one union working for one employer and having no dispute with him, refuses to handle goods produced in the struck plant of a second employer. Taft-Hartley at present has a clause which forbids all secondary boycotts.
- A virtual closed shop for some unions, such as the building trades and theatrical employees.
- Get rid of the requirement that union officers sign anti-Communist affidavits before their unions can use the facilities of the National Labor Relations Board.
- Permit strikers to vote in representation elections.
- Throw out the 80-day injunction provision for use in national emergency strikes.

• **Favor control ban**—Reaction to President Eisenhower's abolition of wage controls brought generally favorable comment from the members of the council.

Top AFL leaders predicted a quick return to "healthy" collective bargaining and the labor men appeared not unhappy about the parallel order eliminating most price controls.

Two powerful members of the executive council, apparently reflecting majority sentiment of the group, told newsmen that the wage and price control action would bring collective bargaining between unions and employers "right back where it belongs at the bargaining table."

Ohio plumbers fight licensing measure

Ohio's Summit County Common Pleas Court in Akron last week was studying evidence and testimony in a suit that was brought by plumbers who seek to bar the county from licensing them.

Challenging the legality of an amendment to the health code which calls for licensing, the plumbers filed suit in December, 1952.

Under the amendment, the county health board raised registration fees for master plumbers from $15 to $25 and provided for registration of journeymen at $5 each.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Mass., Weymouth**—STRUCTURE—B.A. 3/3—First Naval Dist., 495 Summer St., Boston, rehabilitate structure and addns., Auxiliary Landing Field, South Weymouth Spec. 34833. $100,000. Plans deposit $65. CD 9/29/52.

BIDS ASKED—BUILDINGS

▲ **Mass., Boston**—PLANT—B.A. 2/23—Westinghouse Electric Corp., Constr. Div., 401 Liberty Ave., Pittsburgh, Pa., 150x360 ft. plant addn., Damon St., Hyde Park, $1,250,000. Charles T. Main, Inc., 80 Federal St., Boston, engr. CD 10/6/52.

† **R. I., Newport**—BUILDING REPAIRS—B.A. 2/24—P. Wks. Dpt., Naval Base, Newport, repairs to Bldg. 9, Coasters Harbor, NOY 75951, Spec. 36752. Plans deposit $10.

Conn., Stratford—SCHOOL—B.A. 2/26—Town Bd. Educ., N. Parade St., elementary school, Second Hill Lane Area. Plans deposit $75. CD 7/30.

† **R. I., Newport**—ENGINE TRAINING BLDGS.—B.A. 2/26—P. Wks. Office, Naval Base, Newport, repairing engine training bldgs., Bldgs. 138 and 143, Spec. 36659. Plans deposit $10.

Mass., Brookline—SCHOOL—B.A. 3/5—Town, Bldg. Com., Town Hall, Edward Devotion School, 345 Harvard St., $800,000. Plans deposit $100 refundable. Somes, Griswold, Boyden, Wylde & Ames, 53 State St., Boston, archts. CD 12/2, under LB.

Mass., Lynn—CHURCH and COMMUNITY CENTER—B.A. 3/9—Greek Orthodox Community Church, S. Common St., brick, steel, concrete church and community center, S. Common St. $435,000. Valtz & Kimberly, 120 S. Common St., archts. CD 3/25/52.

† **R. I., Davisville**—RAILROAD REPAIR FACILITIES—B.A. 3/11—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., 40x100 ft. railroad repair facilities bldg., 40x100 ft. welding and machine shop; 40x100 ft. paint shop; 40x100 ft. steam Cleaning bldg. No. 1; 40x60 ft. Steam Cleaning Bldg. No. 2; 40x40 ft. gasoline drainage shed, NOY 73839, Spec. 34875. Plans deposit $20. CD 9/12.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **B. Perini & Sons, Inc.**, 73 Montwat Ave., Framingham, Mass. LB **$978,467**, est. $1,000,000. service club, post exchange, commissary, B.O.Q. No. 2, gymnasium, Limestone Air Force Base, ENG. 19-016-53-56, LIMESTONE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Feb. 6. CD 1/30.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

A. V. Taurasi Co., Inc., 139 Jaques St., Somerville, Mass. LB **$2,590,961**, est. $3,000,000. hy. and bridges Rte: No. 1 relocation Proj. FI 62 (9), Amesbury and Salisbury. Bids Feb. 3. CD 1/14.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

J. F. Fitzgerald Constr. Co., 212 Essex St., Boston, Mass. LB **$946,235**, est. $939,000. hy. and bridge Pleasant and King Sts. over Boston and Fall River Expressway, Bridgewater and Raynham.

Petricca Constr. Co., 534 West St., Pittsfield, Mass. LB **$703,264**, est. $768,000. hy. reconstr. Auto Rte. No. 7, Stockbridge Rd., Great Barrington. Bids Feb. 3. CD 1/21.

† **U. S. Eng.**, 857 Commonwealth Ave., Boston, Mass. rejected bids Dec. 15, warehouse and maintenance shops, Otis Air Force Base, Eng. 19-016-53-43, FALMOUTH, MASS. LB **$474,000**. Will re-advertise. CD 12/9, under LB.

Rosa & Tedisco Constr. Co., 20 Shaw St., West Roxbury, Mass., LB, **$192,630**, Contr. 5, sewers, appurtenances East Broadway Main Sewer, Town Meadows to Rogers Ave., MILFORD, CONN. Town, Town Hall, Milford, Conn. Bids Feb. 2. CD 1/29.

N. Benvenuti & Sons, 16 Elm St., New London, Conn., CA, **$790,000**, sewage pumping stations, force mains, sewers and appurtenances, NEW LONDON, CONN. City, Municipal Bldg., New London, Conn. Bids Jan. 14. CD 1/30, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

F. W. Cunningham & Sons, 181 State St., Portland, Me. CA Est. **$500,000.** superstructure BLEACHERY, RUMFORD, ME. Oxford Paper Co., Rumford, Me. CD 9/8/52, under CA.

Clifford A. Swanson, 89 County St., Attleboro, Mass. CA Est. **$85,000.** jewelry MANUFACTURING BLDG., NORTH ATTLEBORO, MASS. Creed Rosary Co., 30 Chestnut St., North Attleboro, Mass. Dwight Seabury Co., 188 Main St., Pawtucket, R. L., archt.

▲ **Construction Units, Inc.**, 199 Washington St., Boston, Mass. CA **$1,353,000.** HOUSING, Proj. PHA 3-3, Magee and Putnam Aves., CAMBRIDGE, MASS. Cambridge Housing Auth., 51 Inman St., Cambridge, Mass. CD 12/2, under LB.

George E. Emerson, Inc., 34 Britton St., Pittsfield, Mass. CA Est. **$400,000.** CHURCH, RECTORY and PARISH HALL, South St., PITTSFIELD, MASS. R. C. Diocese of Springfield, Most Rev. Christopher J. Weldon, bishop, Chancery Office, 62 Elliot St., Springfield, Mass. Bids Jan. 14. CD 1/6.

▲ **City, New London Housing Auth.**, 97 Laurel Dr., New London, Conn., rejected bids Jan. 23, MR-48, moderate rental HOUSING, incl. 180 units, NEW LONDON, CONN. LB, **$1,998,000.** CD 1/27, under LB.

▲ **Frouge Constr. Co.**, 74 Goodsell St., Bridgeport, Conn., CA, **$2,887,000,** PHA Conn-72-HOUSING, STAMFORD, CONN. City Housing Auth., 56 Putnam Lane, Stamford, Conn. Bids Jan. 6, awarded Feb. 4. CD 1/15, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N. J., Hoboken—B.A. 2/24—At Office Chief Engineer Port of New York Auth., 111 Eighth Ave., New York 11, N. Y., elevated steel water storage tank with tower and accessories, on concrete foundations to be constructed by others, at Hoboken-Port Authority Piers, Contr. HP—110.013. Plans deposit $25. CD 5/16, under Unclassified.

† **D. C., Wash.**—B.A. 2/25—Dist. P. Wks. Office, Naval Research Laboratory, Wash., D. C., repairing 60-in. storm sewer at Naval Research Laboratory, NOY 76333.

† **N. Y., Syracuse**—LANDING SYSTEM—B.A. 2/25—Dpt. Commerce, Civil Aeronautics Admin., Federal Bldg., New York, International Airport, Jamacia, instrument landing sys., Clarence E. Hancock Airport Proposal No. 153-1268B1.

N. Y., Albany—B.A. 2/26—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, grading, landscaping and other imprvs. to State College for Teachers campus site. Plans deposit $30. CD 6/29/45, under Public Buildings.

N. Y., Brooklyn—PIER IMPRVS.—B.A. 3/3—At Office Chief Engineer of The Port of New York Auth., 111 8th Ave., New York, Zone 11, repairing, replacing piles on Columbia St. Pier at Port Authority Grain Terminal, foot of Columbia St., Contr. GT-120.002. Plans deposit $25. CD 4/17/50, under Public Buildings.

N. J., Camden—B.A. 3/4—City Purchasing Bd., City Hall, Delaware River Intercepting Sewer, South Section, Contract 9, in public streets, etc. Plans deposit $25. Havens & Emerson, 1414 Woolworth Bldg., 233 Broadway, New York, 7, N. Y., engrs. CD 9/28/45.

† **N.J., Wrightstown**—SHOP, etc.—B.A. On or About 3/13—U.S. Eng., 121 N. Broad St., Phila., 1, Pa., A.I.O. shop, A.I.O. administration space, A.I.O. warehouse, heavy equipment yard and open storage at McGuire Air Force Base, ENG. 36-109-53-412. Extended date. CD 1/7.

† **Del., New Castle**—QUARTERS—B.A. On Or About 3/18—U.S. Eng., 121 N. Broad St., Phila., 1, Pa., bachelor officers' quarters, New Castle County Airport, ENG 36-109-53-456.

BIDS ASKED—BUILDINGS

▲ **Md., Towson**—SCHOOL—B.A. 2/25—Baltimore Co. Bd. Educ., Aigburth Rd., 1 and 2 story, brick, concrete steel Berkshire Elementary School, Dundalk, $1,000,000. Plans deposit $50, Gaudreau & Gaudreau, 330 N. Charles St., Baltimore, archts. J. L. Faisant & Assoc., 21 W. 25 St., Baltimore, struct. engrs. Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, mech. engrs. CD 10/6/52.

N. Y., New York—HOUSING IMPRVS.—B.A. 2/25—New York City Housing Auth., 63 Park Row, Zone 38, topsoil and planting for Bronxdale Houses, Proj. No. NY-5-22, in area bounded by Watson Ave., Sound View Ave., Bruckner Blvd., etc., Bronx Boro. Plans deposit $25. CD 11/25.

N. Y., Poughkeepsie—STOREHOUSE, etc.—B.A. 2/26—Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, storehouse, cold storage, bakery, vegetable preparation bldg. (Bldg. No. 49) at Hudson River State Hospital. Plans deposit $15. CD 11/30/44.

† **N.Y., New York**—ARMORY ROOFING—B.A. 3/3—U. S. Eng., 80 Lafayette St., New York, Zone 13, new roofing for ORC Armory, 529 W. 42 St., Serial No. Eng 30-075-53-281. $28,000. Plans deposit $5.

† **Md., Camp Detrick**—PLANT and SCIENCE LABORATORY, etc.—B.A. 3/5—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C., plant and science laboratory, Eng. 49-080-53-9-(9); soils preparation bldg., Eng. 49-080-53-10-(10); classified bldgs., Eng. 49-080-53-66-(58). CD 2/4.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Teller Paving & Contr. Corp., 389 E. 167 St., New York 56, N. Y., LB **$191,709,** street and yards;

Meadow Brook Nurseries, Inc., 36 Grand Ave., Englewood, N.J., LB **$84,993,** topsoil and planting at Cooper Park Houses, BROOKLYN, N.Y. New York City Housing Auth., 63 Park Row, New York 38, N.Y. Bids Jan. 26. CD 1/22, under Public Buildings.

Meadow Brook Nurseries, Inc., 36 Grand Ave., Englewood, N. J., LB **$84,993,** topsoil and planting for park and playground for Breukelen Houses, Proj. No. N. Y. 5-11, in area generally bounded by Louisiana Ave., Flatlands Ave., Hinsdale St., Glenwood Rd. and area bounded by Louisiana Ave., Glenwood Rd., Williams Ave. and the contract limit line to the northwest of the property in Brooklyn Boro. BROOKLYN, N.Y. New York City Housing Auth., 63 Park Row, New York 38, N.Y. Bids Jan 27. CD 1/8, under Public Buildings.

▲ **Hendrickson Bros.**, 63 N. Central Ave., Valley Stream N. Y., CA. **$1,799,335,** lateral sewers, Franklin Square and West Hempstead, Contr. 1002-2-FS-1, MINEOLA, N. Y. Bd. Supervs. Nassau Co., Old Court House, Franklin Ave., Mineola, N. Y. Bids Jan. 20. CD 1/15.

J. B. R. Constr. Corp., 1819 Broadway, New York 23. N.Y. CA. **$93,100,** reconstruction of Snuff Mill in New York Botanical Garden, Bronx Park, Bronx Boro.. NEW YORK, N.Y. Comr. Parks, at office Dpt. Parks. Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 1, N.Y. Bids Jan. 13. CD 1/5.

† **Ardini & Pfau, Inc.**, Lafayette Bldg., Syracuse, N. Y., CA. **$341,260,** airfield facilities, Part III, (FY 1952), Sampson Air Force Base, ENG 30-075-53-160. SAMPSON, N.Y. U. S. Eng., 80 Lafayette St., New York 13, N.Y. Bids Jan. 29. CD 12/31.

NEW JERSEY—N.J. Hy. Auth., State Hy. Office Bldg., Trenton,

Spearin, Preston & Burrows Inc., 50 Church St., New York, N.Y., LB, **$972,429,** Contr. No. 20, bridges over Matawan Creek relocation and Cheesequake Creek relocation, Section 7 of Garden State Parkway, Middlessex Co. Bids Feb. 5. CD 1/16.

† **Buck & Donohue, Inc.**, 790 Broad St., Newark, N. J. CA. **$534,697.** flood control, Levee Unit 5C, Williamsport Flood Protection Proj. CIVENG 18-020-53-40, PENNSYLVANIA. U. S. Eng., 24 St. and Maryland Ave., Baltimore, Md. Bids Jan. 20. CD 1/26, under LB.

B. D. & W., Inc., R. D. 1, Grantville, Pa., LB **$199,000,** est. $180,000, indoor swimming pool for

(Continued on page 232)

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

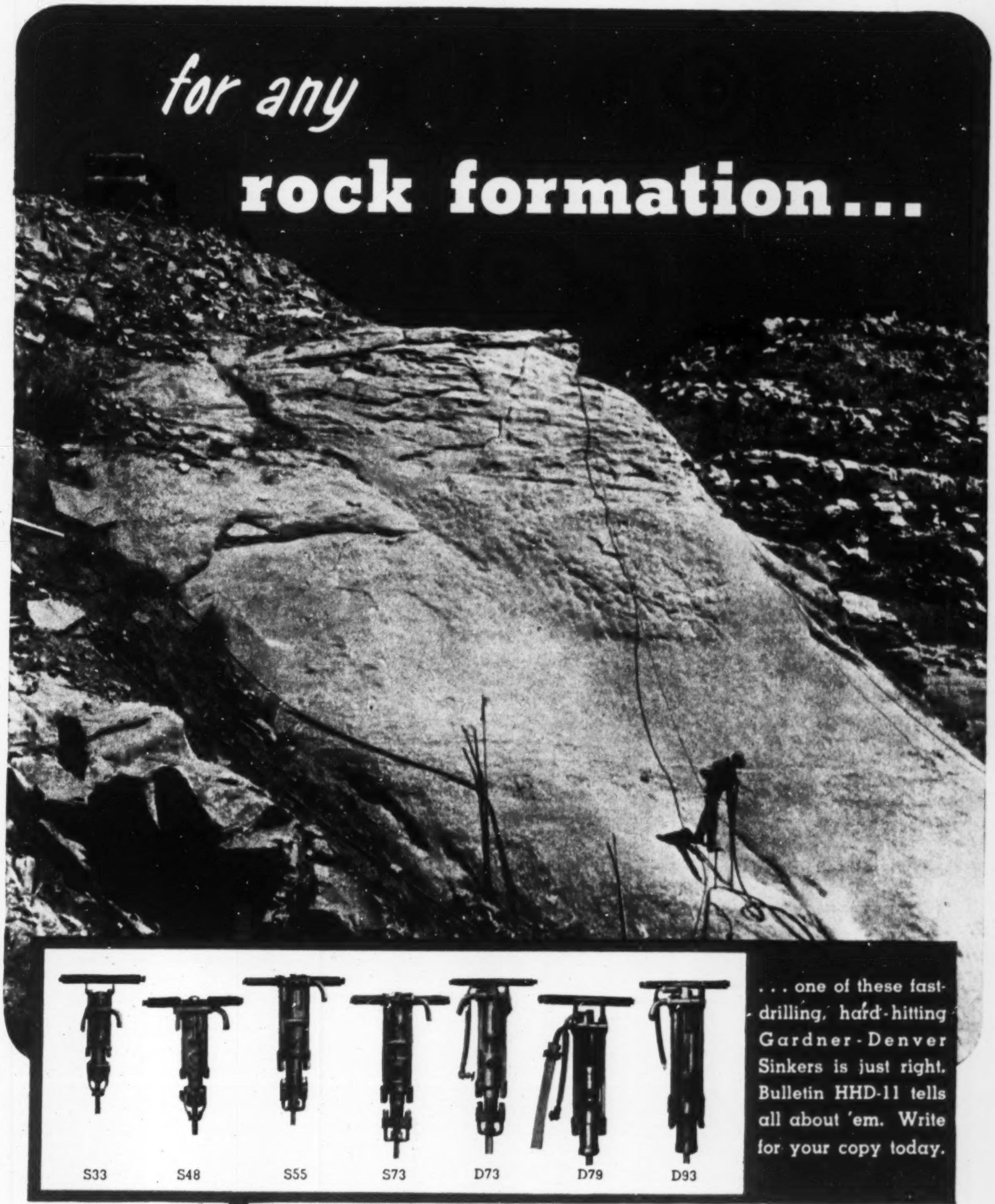
LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects invloved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily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(Continued from page 230)

Scotland School for Veterans Children, SCOTLAND, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids Feb. 4. CD 1/12.

MARYLAND—State Rds. Comm., 108 E. Lexington St., Baltimore, Zone 2,

E. D. Plummer & Son, Chambersburg, Pa. CA **$716,366.** wid'n., surf. existing roadway, relocations of sections 3.934 mi. State Rte. 30, CL 317-2-715, Carroll Co. CD 12/16, under LB.

▲ **Warshaw Constr. Co.,** 101 Park Ave., New York 17, N.Y. LB **$1,605,400,** Queens College LIBRARY, FLUSHING, N.Y. Bd. Higher Educ., Queens College Business Office, 65-30 Kissena Blvd., Flushing 67, N.Y. Bids Jan. 14. CD 12/9.

▲† **Baltimore Contractors, Inc.,** 711 S. Central Ave., Baltimore, Md. CA **$1,043,300.** 3 story, 61x66 ft., rein.-con., steel LABORATORY and ENGINEERING BLDG. for development and proof service, 1 story, 133x148 ft. front central wing, 1 story, 80x140 ft. rear central wing, 2 story, 70x130 ft. rear bldg., ABERDEEN PROVING GROUND, MD. U.S. Eng., 24 St. and Maryland Ave., Baltimore 3, Md. CD 2/3 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

† **Humphreys & Harding,** 60 E. 42 St., New York, N. Y., LB **$258,900.** LAUNDRY Bldg. No. 13 addn., for Veterans Admin. Hospital, Proj. 2-4061, NORTHPORT, N. Y. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Feb. 3. CD 12/17.

▲ **M. W. Kellogg Co.,** 225 Broadway, New York, 7, N. Y., CA, **$6,000,000-$7,000,000,** 60,000 bbl. per day crude distillation unit at REFINERY at Bayway, LINDEN, N. J. Esso Standard Oil Co., 15 W. 51 St., New York, 9, N. Y.

The Davis Constr. Co., 320 W. 24 St., Baltimore, Md. CA **$400,000.** 1 story, brick, steel approx. 55,000 sq. ft. wire PLANT, North Point Rd. near Wise Ave., BALTIMORE, MD. Thompson Wire Co., Milton, Mass. CD 9/9, under Md., Sparrow's Point.

Wm. A. Cassale "Sunrise Cedars", 839 Chapelgate Lane, Catonsville, Md. Owner Builds. **$480,000.** forty 1½ story, 25x33 ft. RESIDENCES, Essex Rd. near Liberty Rd., near BALTIMORE, MD. CD 1/11/51.

Cummins Hart Constr. Co., 318 Wyndhurst Ave., Baltimore, Md. CA **$125,000.** concrete block, brick AUTO REPAIR and SERVICE, 2515 N. Howard St., BALTIMORE, MD. City Chevrolet, 101 W. Mt.

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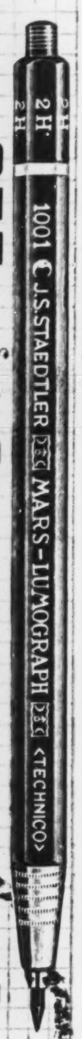

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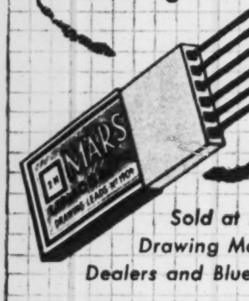

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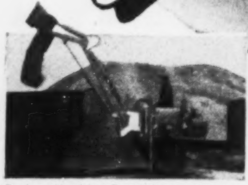

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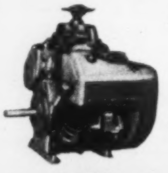
Kwik-Mix Mixer with tower loader, powered by 4-cylinder model.



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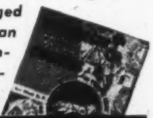

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Royal Ave., Baltimore, Md. J. L. Faisant & Assoc., 21 W. 25 St., Baltimore, Md., engrs.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

La., New Iberia—B.A. 3/2—City, City Hall, Paving Proj. No. 2, 41,000 sq. yd. paving. $80,000.

Tenn., Knoxville—STADIUM—B.A. 3/4—City, City Hall, baseball stadium. $500,000. Plans deposit $100. John W. Bush, 408 W. Clinch Ave., engr. CD 1/6, under LB.

Tenn., Milan—B.A. 3/10—City, sanitary sewer imprvs. $100,000. Plans deposit $25. Allen & Hoshall, 65 McCall Pl., Memphis, engrs. CD 1/26.

† **Kentucky**—B.A. On Or About 3/18—U.S. Eng., 237 Fourth Ave., Huntington 18, W. Va., Limestone Creek Levee and exten., Local Protection Proj. city of Maysville, Mason Co., along left descending bank of Ohio River, CIVENG 46-022-53-45. Plans deposit $7.50. CD 10/30/52.

BIDS ASKED—BUILDINGS

▲ **Fla., West Palm Beach**—HOSPITAL—B.A. 2/27—St. Mary's Hospital, Mother Josephine, administrator, 900 W. 49 St., 3 wing addn., 3 story, RIC, $1,500,000. Skidmore, Owings & Merrill, 575 Madison Ave., New York, N. Y., engrs.

Miss., Jackson—CHURCH—B.A. 3/6—First Baptist Church, 430 N. President St., church addn. $600,000. Plans deposit $25, N. W. Overstreet & Assoc., 201 N. Lamar St., Jackson, archts.

Ala., Decatur—PLANT—B.A. 3/16—Coca-Cola Bottling Co., Decatur, bottling plant. $150,000. Horace M. Weaver & Co., 202½ 2 Ave., archts.

Va., Staunton—JAIL—B.A. 3/19—Bd. Supervs. Augusta Co., Staunton, jail. $600,000. Plans deposit $50. Extended date. J. L. Williams & Assoc., Marion, archts. CD 1/22.

SOON LETS CONTRACT—BUILDINGS

La., Luling—PLANT—Lion Oil Co., Luling, soon lets contract Barton plant addn. CD 9/9.

HEAVY CONSTRUCTION

M. S. Hudgins, 41 36th St. NW, Roanoke, Va. CA $51,447, WW imprvs., incl. water lines, fire hydrants, ROANOKE, VA. City, Municipal Bldg., Roanoke, Va. CD 8/8/50.

† **Paul D. Jett Constr. Co.**, Lakeland, Fla.; LB. **$68,736**. electrical distr. sys. imprvs., Inv. 53-9, CAMP GORDON, GA. U S Eng, 200 E. St. Julian St., Savannah, Ga. Bids Feb. 3. CD 1/16.

▲† **J. A. Jones Constr. Co.**, 133 Ellis St. N.E., Atlanta, Ga., LB. **$1,341,294**, hangar washrack, fire protection sys. Hunter Air Force Base, Inv. 53-29,

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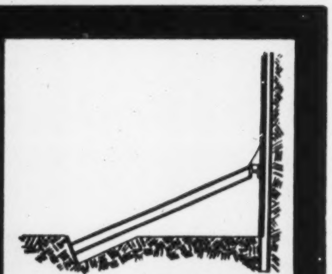

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SAVANNAH, GA. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Feb. 5.

† **Knutson Constr. Co.,** 3803 S. Main St., Houston, Tex. CA. **$327,028.** fuel storage facilities at Lake Charles Air Force Base, Inv. 53-60, LAKE CHARLES, LA. U. S. Eng., Box 1229, Galveston, Tex. Bids Feb. 3. CD 1/28.

Chicago Bridge & Iron Co., National Standard Bldg., Houston, Tex. CA. **$67,800.** furnishing, erecting 500,000 gal. steel water tank, MINDEN, LA. City, City Council, Minden, La. Bids Feb. 2. CD 1/16.

† **Leslie Miller Inc.,** P.O. Box 3338, Fort Worth, Tex. CA. **$787,627.** aircraft refueling facilities at Barksdale Air Force Base, Inv. 53-36, SHREVEPORT, LA. U. S. Eng., 300 Broadway, Little Rock, Ark. Bids Feb. 5. CD 1/7.

† **J. Trietz & Sons,** 74 Franklin St., Louisville, Ky. CA. **$60,835.** constr. Known Distance Rifle Range Forest Hill Nr., Serial No. 15-014-53-52, FORT KNOX, KY. Armored Center, Central Purchasing & Contracting, Branch G-4, Fort Knox, Ky. Bids Dec. 17. CD 12/11.

† **Highland Constr. Co., Inc.,** 4416 Poplar Level Rd., Louisville 13, Ky. CA. **$71,550.** constr. Crumbs Gunnery Range, renovation of track, exten. firing line at Steeles Nr. 2 and Nr. 3, constr. Target Roadway with protective bergs at Brumfield Range, FORT KNOX, KY. Armored Center, Central Purchasing & Contracting, Branch G-4, Fort Knox, Ky. Bids Dec. 18. CD 12/4

BUILDINGS

LOW BIDS AND CONTRACTS

Hickory Constr. Co., Hickory, N. C. LB **$628,919.** Rye Cove HIGH SCHOOL, GATE CITY, VA. Scott Co. Bd. Educ., Gate City, Va. Bids Feb. 3. CD 1231.

King-Hunter, Inc., Greensboro, N. C., LB **$127,493.** SHOP and MAINTENANCE BLDG., GREENSBORO, N. C. Womans College of University of North Carolina, Greensboro, N. C. Bids Jan. 29. CD 1/23.

Dawson Eng. Co., 10 Gillon St., Charleston, S. C., LB **$893,798,** KITCHEN and BAKERY, at South Carolina State Hospital, COLUMBIA, S. C. State Mental Health Comn., State Capitol, Columbia, S. C. Bids Jan. 29. CD 12/17.

L. W. Gray, 675 Stockton St., Decatur, Ga., Owner Builds, **$300,000** 36 RESIDENCES, ATLANTA, GA.

Elmer Lewis, 309 Fletcher St. S.W., Atlanta, Ga., Owner Builds, **$310,000** 37 RESIDENCES, ATLANTA, GA.

▲ **Rust Engineering Co.,** Exchange Bldg., Birmingham, Ala., CA, **$1,250,000,** design and construct 16,000 sq. ft. cracker and biscuit mfg. PLANT, MACON, GA. Strietman Biscuit Co., Mariemont, O. Awarded Feb. 5.

S. J. Curry & Co., Albany, Ga., CA, **$725,500,** TRAINING SCHOOL and ELEMENTARY SCHOOL addn., PELHAM, GA. City, City Hall, Pelham, Ga. Bids Dec. 18. CD 12/23, under LB.

▲ **Frank Macino,** 334 Biscayne Blvd., Miami, Fla., CA **$1,500,000,** 148 RESIDENCES, HOLLYWOOD, FLA. Florida House Sales Co., 334 Biscayne Blvd., Miami, Fla.

Stobs Bros. Constr. Co., 7010 N.E. 4 Court, Miami, Fla., CA, **$100,000** WAREHOUSE-OFFICE, MIAMI, FLA. Roberts Supply Co., 300 N.E. 72 St., Miami, Fla.

Florala Constr. Co., 104 First Ave. N., Birmingham, Ala., CA, **$750,000,** 100 single family RESIDENCES, PENSACOLA, FLA. Mengel Homes, c/o Joe H. Bryson, archt., 111 . Adams St., Jacksonville, Fla.

Sanfo Park Homes, Inc., c/o Hugo R. Broleman, Jr., 1216 E. Colonial Dr., Orlando, Fla. Owner Builds, **$500,000.** 50 RESIDENCES, ST. PETERSBURG, FLA.

Montevallo Development Co., Montevallo, Ala., Owner Builds, **$400,000,** 40 RESIDENCES, MONTEVALLO, ALA.

Kimbrough Homes, 4008 Oak Lawn, Jackson, Miss. Owner Builds. **$500,000.** 50 RESIDENCES, JACKSON, MISS.

Aurora Development Co., 5001 General Meyer Ave., New Orleans, La. Owner Builds. **$480,000.** 40 RESIDENCES, NEW ORLEANS, LA.

Otis, W. Sharp & Son, 2401 Rousseau St., New Orleans, La. LB **$141,850.** Contr. No. 101-G, 7 INDUSTRIAL BLDGS. at Yard No. 2 bounded by Eads St. Peoples Ave., Abundance St. and Florida Ave., NEW ORLEANS, LA. Sewer and Water Bd., 526 Carondelet St., New Orleans, La. Bids Feb. 4. CD 1/26.

Forcum-James Co., Dyersburg, Tenn., CA. **$602,094,** HOUSING, Projects Tenn. 25-1 and Tenn. 25-2, TRENTON, TENN. Trenton Housing Auth., Trenton, Tenn. Bids Dec. 23.

MIDDLE WEST

† **O., Youngstown**—LIGHTING SYSTEM—B.A. On Or About 3/4—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., street lighting sys., Youngstown Municipal Airport, Serial No. ENG 46-022-53-37.

† **O., Columbus**—HEATING PLANT—B.A. 3/5—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., central steam heating plant and five multi-purpose docks, Lockburne Air Force Base, Serial No. ENG 46-022-53-35. CD 1/21.

† **Wis., Antigo**—B.A. 3/10—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, rehabilitation of roads, drives and parking areas in vicinity of Antigo, ENG-47-013-53-37. CD 1/30.

(Continued on page 236)

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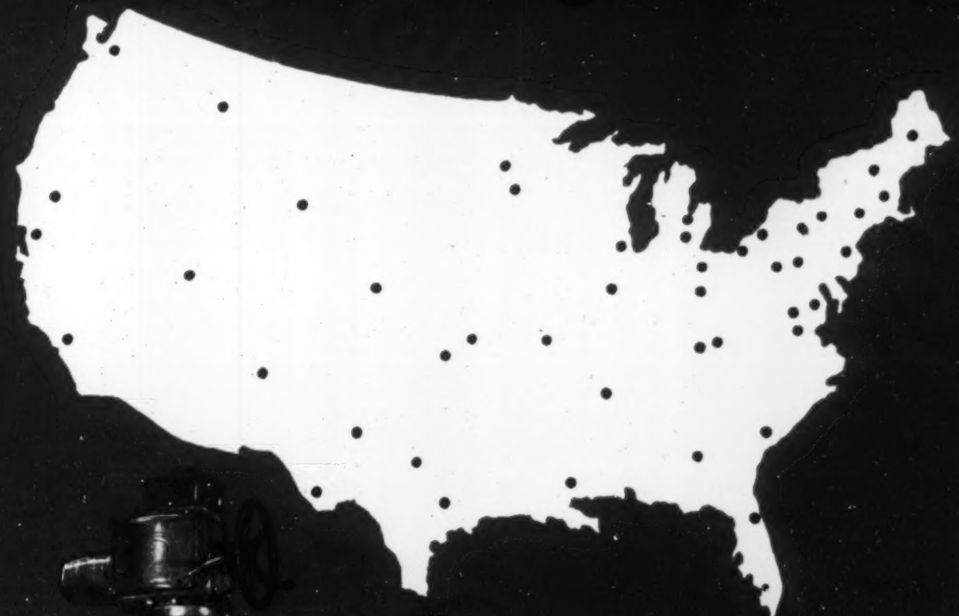

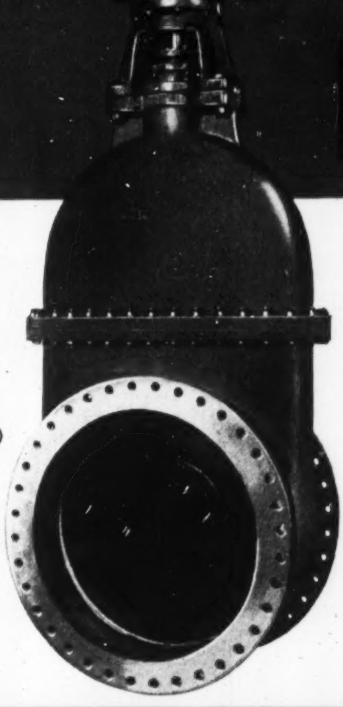

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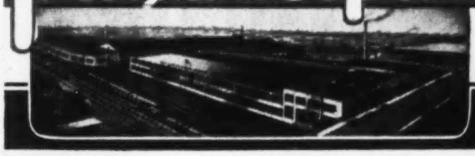

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(Continued from page 234)

† O., **Columbus**—RESERVOIR GROUND STORAGE, etc. —B.A. On Or About 3/13—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., reservoir ground storage and pumping station, Lockbourne Air Force Base, Serial No. ENG. 46-022-53-38. Plans deposit $5.

† O., **Columbus**—WATER TREATMENT PLANT, etc.—B.A. On Or About 3/17—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., modification and expansion of water treatment plant and well sys., Lockbourne Air Force Base, Serial No. ENG. 46-022-53-41. Plans deposit $5.

† O., **Toledo**—ROAD, HARDSTAND—B.A. On Or About 4/1—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., road and hardstand at Rossford Ordnance Depot, in Wood Co., approx. 7 mi. south of here, Serial No. ENG-46-022-53-40. CD 7/2.

BIDS ASKED—BUILDINGS

Wis., **Baraboo**—HOUSING—B.A. 3/5—Public Housing Admin., 201 N. Wells St., Chicago, Ill., remodeling ten 1 story "H" shaped bldgs. into 160 APARTMENTS, imprv. roads, etc. Proj. Wis. 2-D-1. Plans deposit $35. S. A. Lichtmann, 1 N. LaSalle St., Chicago, Ill., engr. and archt.

O., **Columbus**—SCHOOL—B.A. 3/13—Bd. Educ., 270 E. State St., 1 story, 14-room brick, concrete, steel Sullivant Ave. Elementary School. $315,000. Plans deposit $10. CD 10/29.

Wis., **Shorewood**—STORE—Bids Asked—Kohl's Food Stores, 4623 W. Burleigh St., Milwaukee, 1 story bsmnt., 100x150 ft., brick, steel store. R. E. Rasche, 783 N. Jefferson St., Milwaukee, Zone 2, engr. Grassold & Johnson & Assocs., 734 N. Jefferson St., Milwaukee, archts. CD 11/6.

SOON LETS CONTRACT—BUILDINGS

▲ Ind., **Greencastle**—FACTORY—International Business Machine Co., 420 E. Jefferson St., Detroit, Mich., soon lets mechanical and electrical contracts for brick, steel business cards factory, $3,000,000. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, Mich., archt. CD 8/25.

O., **Cuyahoga Falls**—HOSPITAL—Green Cross Hospital, E. A. Paisley, admin., Cuyahoga Falls, soon lets contract, hospital, Falls and Babb Rd. Inscho, Branch & Inscho, 60 E. Broad St., Columbus, archts. CD 1/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Christopher Constr.**, 40 W. Gay St., Columbus, LB. **$858,407**, water treatment; LB. **$215,953**, Horn's Hill Reservoirs No. 2 and 3;

Fishel Co., 1170 Kinnear Rd., Columbus, O., LB. **$258,478**, 10,500 ft. 6- to 24-in. c.i. pipe, **$259,382**, Alt. concrete pipe, NEWARK, O. City, City Hall, Newark, O. CD 5/23.

† **Walter T. Dunlap & Co., and Inland Constr. Co. of Nebraska**, P.O. Box 541, Lexington, Neb., CA. **$672,500**. 500 relief wells and 100 piezometers along landside toe of river front and land levees of Harrisonville and Ivy Landing, Fort Chartres and Ivy Landing, Stringtown, Fort Chartres and Ivy Landing Drainage and Levee District, Monroe and Randolph Counties, CIVENG 23-065-53-63, ILLINOIS. U. S. Eng., 420 Locust St., St. Louis, 2, Mo. Bids Dec. 5, awarded Jan. 13. CD 12/12, under LB.

City, City Hall, East Dundee, Ill., rejected bids sewage treatment plant and sewers lines, EAST DUNDEE, ILL. CD 1/28, under LB.

WISCONSIN—State Hy. Comn., **Madison**,

Wunderlick Bros., Appleton, Wis., LB. **$131,830** Contract 1, hy. overhead structure B-13-9, 0.057 mi. East Madison Belt Line (Reindahl Overhead), U. S. Hy. 51, Proj. FGI 04-1 (15), Dane Co.;

Tri-State Construction Co., Alma, Wis., LB. **$66,407**, Contract 1, hy. overhead structure B-47-11. The Red Wing—U.S.H. 10 Road, 0.035 mi. U. S. Hy. 3, Proj. FG 028-1 (34) Pierce Co.

WISCONSIN—State Hy. Comn., State Hy. Office Bldg., Madison,

White Consolidated, 710 N. Plankington Ave., Milwaukee, Wis., LB. **$284,091**, conc. base course, sheet asph. paving 0.629 mi. Main St. (City of Fond du Lac) U.S. Hy. 45, Contract 1, Proj. U4702 (4), Fond du Lac Co.;

J. P. Humphries, 1226 W. Wisconsin St., Milwaukee, Wis. LB. **$124,521**, 3.8 mi. Contract 1, U.S.H. 41-S.T.H. 38 and South County Line-S.T.H. 100 Roads, Proj. T 059-1 (5) and T 074-1 (5), S.T. Hys. 100 and 38, Milwaukee Co.

Oak Constr. Co., Royal Oak, Mich. CA. **$134,000**. imprv. streets, BERKLEY, MICH. City, Berkley, Mich. CD 7/3/52.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Booth & Flinn Co.**, 1942 Forbes St. and **Ferguson & Edmondson Co.**, Keystone Bldg., Pittsburgh, Pa., CA. **$6,500,000**, general contract 1,000,000 kilowatt Kyger Creek POWER PLANT, CHESHIRE, O. Ohio Valley Electric Co., 30 Church St., New York 8, N. Y. CD 1/14.

Frank Messer & Son, Inc., Paddock Rd., Cincinnati, O., CA. **$585,020**. 2 story, bsmnt., rein.-con. cross-shape YOUTH CENTER, incl. classrooms, 2 dormitories Auburn Ave., CINCINNATI, O. Juvenile Detention Home, Court House and Court House Annex, Cincinnati, O. Bids Jan. 6, awarded Feb. 3. CD 2/3, under LB.

▲ **Frank Messer & Son, Inc.**, Paddock Rd., Cincinnati, O., LB **$1,793,700**. 3 story bsmnt., rein.-con., masonry Basin Senior HIGH SCHOOL, North Washington Park, CINCINNATI, O. Bd. Educ., 216 E. 9 St., Cincinnati, O. Bids Feb. 4. CD 1/16.

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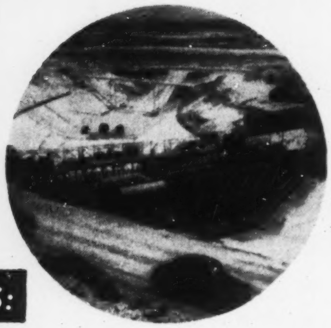

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▲ **Sam W. Emerson Co.,** 1836 Euclid Ave., Cleveland, 14, O., CA. Approx. **$4,500,000.** 130,000 sq. ft. SHOPPING CENTER, incl. department store, 80-acre site on Hy. Rte. 254, Sheffield Twp., ELYRIA, O. M. O'Neil Co., 226 S. Main St., Akron, O. Weinberg & Teare, Citizens Bldg., Cleveland 14, O. Awarded Jan. 29. CD 11/13, under CA.

▲ **Algernon Blair,** 1st Natl. Bank Bldg., Montgomery, Ala., CA. **$1,300,000.** 145 RESIDENCES, JACKSON, O. Jackson Heights, Inc., c/o contractor. CD 12/9, under CA.

▲ **Knowlton Constr. Co.,** 106 N. Main St., Bellefontaine, O.; CA. **$1,323,300,** general constr.;

E. W. File Co., Lima, O., CA. **$584,112,** heating, plumbing, ventilating, Marion General HOSPITAL, MARION, O. City, City Hall, Marion, O. Bids Dec. 23; awarded Feb. 5. CD 12/31, under LB.

▲ † **Grinnell Corp.,** 260 W. Exchange St., Providence, R. I. CA. **$230,000,000,** mechanical constr. to install process piping, auxiliary piping, instrumentation testing equipment, etc., at Uranium 235 Gaseous Diffusion PLANT (Sub-contractor under Peter Kiewit Sons' Co., P. O, Box 268, Portsmouth O.), for Atomic Energy Comn., 1901 Constitution Ave. N. W., Wash. 25, D. C. PIKETON and WAKEFIELD, O. CD 10/22, under CA.

▲ **Huber, Hunt & Nichols, Inc.,** Speedway, Indianapolis, Ind., CA, **$2,750,000** business cards PLANT, GREENCASTLE, IND. International Business Machine Corp., 420 E. Jefferson St., Detroit, Mich, Bids Jan. 15. CD 12/30.

McKenzie Realty Co., 915 Broad Ripple Ave., Indianapolis, Ind., Owner Builds, **$550,000,** 25 HOMES, in Rolling Acres Subdivision, INDIANAPOLIS, IND.

Charles F. Holtz, Realtor and Builder, 400½ N. Main St., Kokomo, Ind., Owner Builds, **$500,000,** HOUSING DEVELOPMENT, 40-acre tract, Bon Air Crest Addition, KOKOMO, IND.

▲ **Sollitt Constr. Co.,** 301 Columbia St., South Bend 24, Ind., CA. **$8,000,000,** 1,200,000 kilowatt Clifty Creek POWER PLANT, near MADISON, IND. Indiana-Kentucky Electric Co., 30 Church St., New York 8, N. Y. CD 1/14.

Tonn & Blank, 104 Franklin St., Michigan City, Ind., LB, **$489,051,** HOSPITAL, VALPARAISO, IND. Porter Memorial Hospital, 814 La Porte Ave., Valparaiso, Ind. Bids Jan. 15. CD 12/29.

▲ **Coath & Goss,** 5103 W. Lake St., Chicago 44, Ill., LB **$1,136,814,** Hendricks Grade SCHOOL, CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago 2, Ill. Bids Jan. 30. CD 1/21.

▲ **Turner Constr. Co.,** 105 W. Adams St., Chicago 3, Ill., CA, **$5,000,000,** 10 story OFFICE, Wacker Dr. and Randolph St., CHICAGO, ILL. John W. Galbreath & Co., 42 E. Gay St., Columbus, O. Sinclair Refining Co., principal occupant. Holabird, Root & Burgee, 180 N. Wabash St., Chicago 1, Ill., archts. Awarded Feb. 3.

Coath & Goss, 5103 W. Lake St., Chicago, Ill., LB, **$949,844,** La Salle St. STATION, paving and sewers luggage storage and mail bldg. for Congress Expressway, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Jan. 29. CD 1/8.

J. L. Simmons Co., Inc., 106½ S. Neil St., Champaign, Ill., CA. **$896,000,** 100 DWELLING UNITS and MANAGEMENT BLDG. on Site Proj. Ill. 44-1, PEKIN, ILL. Tazewell County Housing Auth., 512 Court St., Pekin, Ill. Bids Nov. 10. CD 10/15, awarded Jan. 8.

City Wide Builders, 5400 Elston Ave., Chicago, Ill., LB, **$417,000,** 3 story, HIGH SCHOOL wing addn., Lincoln Ave. and Niles St., SKOKIE, ILL. Niles Twp. High School, Skokie, Ill. Bids Feb. 2. CD 1/21.

▲ **Holtzman & Silverman,** 2120 National Bank Bldg., Detroit, Mich. Owner Builds. **$2,000,000.** two hundred 1½ story single HOUSES, Evergreen St. between Seven Mile Rd. and Grand River, DETROIT, MICH.

▲ **Rodney Lockwood,** 2031 National Bank Bldg., Detroit, Mich. Owner Builds. **$3,600,000.** 300 brick single HOUSES, Cambridge Village, Eleven Mile Rd. between Greenfield and Southfield Rds., SOUTHFIELD, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

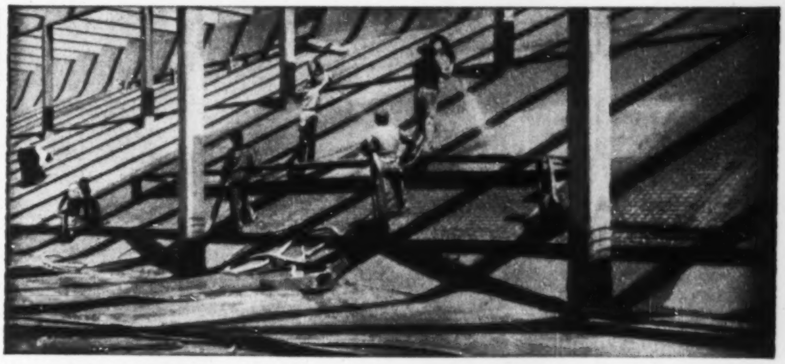
† **Kan., Wichita**—RUNWAYS, etc.—B.A. 2/26—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., runways, taxiways (II), Wichita Air Force Base, Inv. 23-028-53-77. CD 2/2/51.

Tex., Lubbock—B.A. 2/26—City, City Hall, 2 m. g. ground rein.-con. water reservoir, No. 7 pump station and elevated steel storage. $225,000. Plans deposit $30. Parkhill, Smith & Cooper, 1414 Avenue J, engrs. CD 1/28.

† **Tex., Sherman**—MAINTENANCE AND TRAINING FACILITIES—B.A. 2/26—U. S. Eng., Box 61, Tulsa 2, Okla., maintenance and training facilities, incl. electric and base maintenance shop, training aids shop, at Perrin Air Force Base, Inv. No. Eng 34-066-53-92. $250,000. CD 7/11/51.

† **N. M., Roswell**—WATER SUPPLY—B.A. 2/27—U. S. Eng., Box 1538, 2108 Central Ave. SE, Albuquerque, addnl. water supply facilities, water well, drilling and casing one water well approx. 520 ft. deep, Serial No. Eng 29-005-53-100, Walker Air Force Base. Plans deposit $25. CD 8/28/51.

† **Tex., Lubbock**—RUNWAY, etc.—B.A. 3/2—U. S. Govt., Purch. & Contg. Officer, Reese Air Force Base, Lubbock, rehabilitation North-South Runway and Taxiways No. 2 and extens. of drainage facilities, No. 41-620-53-30. $90,000. CD 8/30/51.



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† **Kan., Olathe**—RUNWAY—B.A. 3/4—Ninth Naval Dist., Great Lakes, Ill., seal coat on asph. runway and taxiway at Naval Air Station, Spec. 35938. CD 6/1/51.

† **Tex., Kelly Air Force Base**—RADIO RANGE—B.A. 3/5—U. S. Eng., Box 1229, Galveston, VHF omnidirectional radio range, Inv. No. Eng 41-243-53-27. $65,000. CD 1/14, under LB.

† **Okla., Oklahoma City**—JET ENGINE TEST BLDG.—B.A. 3/12—U. S. Govt., c/o Directorate of Procurement and Production, Tinker Air Force Base, Oklahoma City, four-cell high thrust jet engine test bldg. (Bldg. T-24), Inv. Serial No. (IFB) 34-601-53-344. Approx. $500,000. CD 6/4.

† **North Dakota**—B.A. On Or About 3/17—U. S. Eng., Fort Lincoln, P.O. Box 300, Bismarck, approx. 38 mi. highway on Fort Berthold Indian Reservation, Rte. 11, 20 and 22, Serial No. CIVENG 32-015-53-32.

† **South Dakota** — CONTROL BOARDS ADDNS. — B.A. 3/19—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., furnishing, del. f.o.b. cars shipping point or f.o.b. cars Huron, etc., main control board addns. one each at Huron, Mount Vernon, Sioux Falls, Watertown Sub-stations, Transmission Div., Missouri River Basin Proj., Inv. No. DS-3886.

† **Tex., Del Rio**—RUNWAYS, etc.—B.A. 3/20—U. S. Eng., Box 1229, Galveston, construction parallel Northwest-Southeast Runways and connecting taxiways, incl. 350,000 ft. excav., 55,000 ft. flexible base, 2,300 tons asphaltic concrete, etc. Laughlin Air Force Base, Inv. No. Eng. 41-243-53-114. $500,000-$1,000,000. CD 1/14.

† **N. M., Los Alamos**—B.A. 3/31—U. S. Atomic Energy Comn., Los Alamos, Phase A, site clearing program, Inv. 291, 53,5. $100,000.

BIDS ASKED—BUILDINGS

Kan., Hays—CHURCH, etc.—B.A. 2/26—St. Marys Parish, Hays, church and school. $325,000. Shaughnessy & Bower, Congress Bldg., Kansas City, Mo., archts. CD 8/28/52, under St. Joseph's Catholic Church as owner.

† **North Dakota**—RESIDENCES, etc.—B.A. On Or About 3/3—U. S. Eng., Fort Lincoln, P.O. Box 300, Bismarck, relocation of residences, garages and misc. bldgs. in Fort Berthold Indian Reservation to four new sites on the reservation and in New Town, Inv. No. CIVENG 32-015-53-34. CD 12/31.

Minn., Cloquet—SCHOOL—B.A. 3/3—Bd. Educ., I. C. Nelson, clk., 2 story, ground floor high school addn. $900,000. Plans deposit $20. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, archts.

Tex., Brenham—HOSPITAL—B.A. 3/3—Sisters of St. Francis (Sylvania, O.). Brenham, 3 story hospital. $800,000. Plans deposit $50. Extended date. The Walter Butler Co., c/o Ray R. Gauger, ch. archt., 1300 Minnesota Bldg., St. Paul, Minn., archt. CD 1/13.

Tex., Bryan—HOSPITAL—B.A. 3/5—St. Josephs (Sylvan, O.), Brenham, 65-bed capacity hospital expansion. $600,000. Plans deposit $50. Extended date. The Walter Butler Co., 1300 Minnesota Bldg., St. Paul, Minn., archt. CD 1/13.

Mo., North Kansas City—SCHOOL—B.A. 3/10—Bd. Educ., c/o Hubert W. Schooling, supt., 1 story, T-shaped Crestview Elementary School, 4327 Holmes St. $358,875. Edw. M. Fuller, 701 E. 14 Ave., North Kansas City, Mo., archt. CD 9/18/52.

▲ **Tex., Houston**—SEMINARY BLDGS.—B.A. 3/31—St. Mary's Seminary, 1018 Preston St., library and admin. bldg. ,$575,000; dormitory, $350,000; power and heating plant, $90,000; sanctuary, $300,000; refractory, dining hall, laundry, $325,000; classrooms bldg., $325,000; laboratory and science, $300,000. Maurice J. Sullivan, 3901 Travis St., archt. Reg. F. Taylor, Bankers Mortgage Bldg., and Francis J. Niven, 3908 Main St., engrs. CD 2/6.

Tex., Houston—GARAGE—Bids Asked—M & M Building Corp., M & M Bldg., ramp parking garage. $500,000. Bids extended. J. Russ Baty, Box 1414, archt. Robert J. Cummins, 1208 Bankers Mortgage Bldg., engr. CD 2/4.

SOON LETS CONTRACT—BUILDINGS

▲ **Neb., Omaha**—SCHOOL—Sisters of Mercy, 1801 S. 72 St., soon lets contract school constr., 3 bldgs. $1,500,000. L. A. Daly & Co., Insurance Exchange Bldg., archts. CD 1/20.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Geo. Bennett Constr. Co., 1520 Central Ave., Kansas City, Kan. LB. **$308,627**, est. $425,000. exten. Van Brunt Blvd. from 35 to Benton Blvd. just north of Sebree Bridge over Brush Creek, KANSAS CITY, MO. City, Park Bd., c/o J. V. Lewis, supt., City Hall, Kansas City, Mo. Holland Wheeler, c/o owner, bd. engr. Bids Feb. 4. CD 12/19.

† **Olson Constr. Co.,** 410 S. 7 St., Lincoln, Neb., LB **$271,500**, AIO office, warehouse, shop bldgs., Lincoln Air Force Base, Inv. 25-066-53-118, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Feb. 3. CD 1/9.

▲† **C. H. Leavell Co.,** 1900 Wyoming St., El Paso, Tex. CA. **$4,586,347**, airmen's dormitories, mess and admin. bldgs., Lincoln Air Force Base, Inv. 25-066-53-37, LINCOLN, NEB. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Jan. 8. CD 1/15, under LB.

Fairbanks-Morse Co., 9 and Harney Sts., Omaha, Neb., CA. **$47,120**, furnish, install motor driven pumps for new 34th and Pacific Water Pumping Station, OMAHA,

(Continued on page 240)

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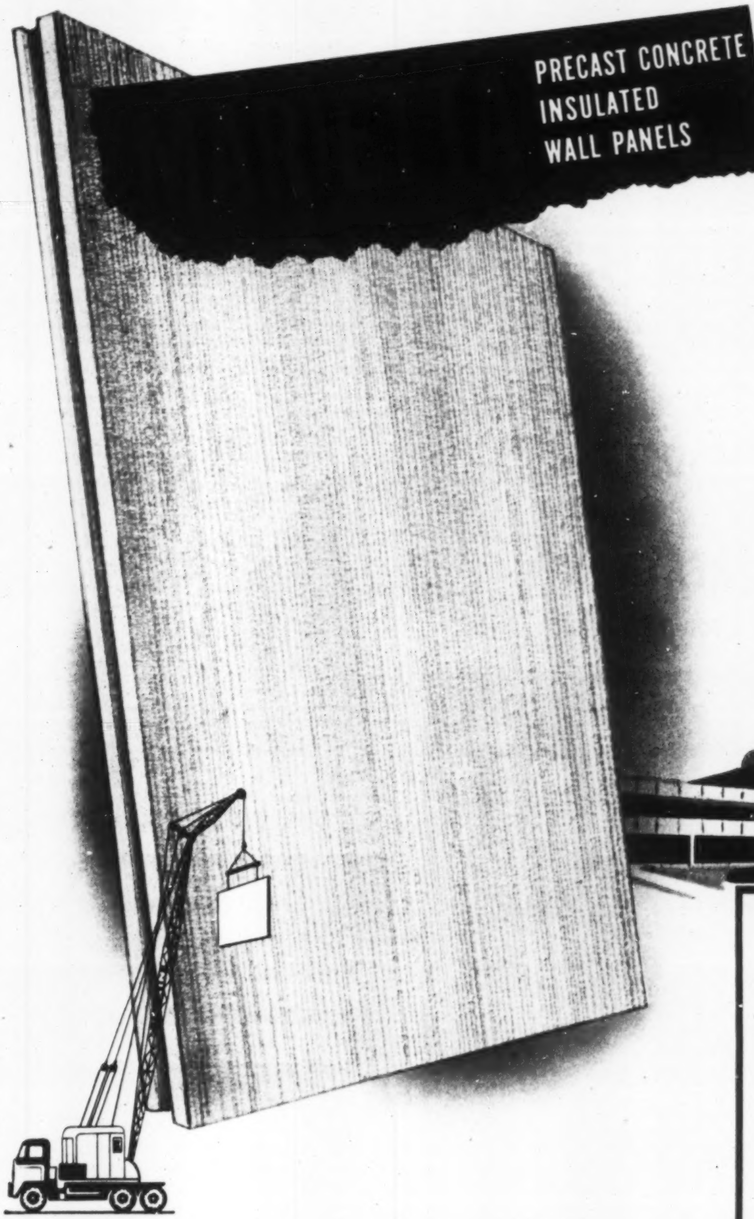
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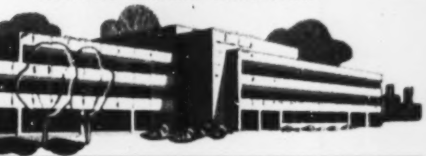

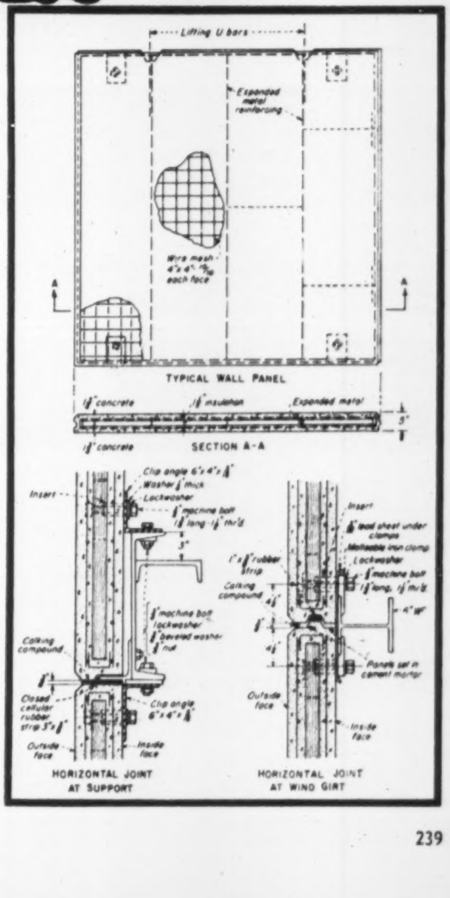
Lifting U bars
Expanded metal reinforcing
Wire mesh 4"x4" 10/10 each face
A
A
TYPICAL WALL PANEL
1½" concrete
1½" insulation
Expanded metal
5"
1½" concrete
SECTION A-A
Clip angle 6"x4"x⅜"
Washer ⅛" thick
Lockwasher
Insert
⅝" machine bolt 1⅜" long-1½" thr'd
3"
⅝" machine bolt
lockwasher
⅝" beveled washer
⅝" nut
Calking compound
⅛"
Closed cellular rubber strip 3"x⅛"
Clip angle 6"x4"x⅜"
Outside face
Inside face
HORIZONTAL JOINT AT SUPPORT
Insert
⅛" lead sheet under clamps
Malleable iron clamp
Lockwasher
⅝" machine bolt 1⅜" long, 1½" thr'd
1"x⅛" rubber strip
Calking compound
4⅞"
⅛"
4⅞"
4" WF
Panels set in cement mortar
Outside face
Inside face
HORIZONTAL JOINT AT WIND GIRT

Panels are cast solid or with insulation in a variety of sizes, ready to erect. Can be trucked to your site if it's within 300 miles of Marietta, O., Baltimore, Md., or New York City. They can also be cast at your site when advisable.

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Pulaski Hwy. at Race Rd., Baltimore 21, Md.

(Continued from page 238)

NEB. Metropolitan Utilities Dist., 18 and Harney Sts., Omaha, Neb., D. D. Long, c/o owner, engr. CD 8/8.

Metropolitan Utilities Dist., 18 and Harney Sts., Omaha, Neb. Owner Builds. **$401,000,** gas main extens. OMAHA, NEB. D. D. Long, c/o owner, engr.

Leo Markowitz, Emporia, Kan. LB. **$89,765.** swimming pool and bath house, BURLINGTON, KAN. City, Burlington, Kan. Brink & Dunwoody, Iola, Kan., engrs. Bids Jan. 28.

Burt & Binford Constr. Co., Hutchinson, Kan. CA. **$97,-412.** swimming pool, LIBERAL, KAN. City, Liberal, Kan. CD 8/21/50.

Darby, Inc., 333 N. 6 St., Kansas City, Kan. CA. **$71,-088.** tower and elevated water tank, SALINA, KAN. City, Salina, Kan. CD 10/29/52.

† **Johnson Bros.**, Salina, Kan. LB **$121,938.** radio stations, navigation aids, Smoky Hill Air Force Base, Inv. 23-028-53-75, SALINA, KAN. U.S. Eng., 601 Davidson Bldg., Kansas City, 8, Mo. Bids Jan. 30. CD 12/31.

Walco Eng. Co., 2408 E. 4 St., Tulsa, Okla., CA **$605,000,** est. $625,000, 94 mi. transmission lines, Caddo Co., OKLAHOMA. Western Farmers Electric Cooperative, Anadarko. Awarded Jan. 21. CD 12/24, under LB.

† **Burton-Miller Constr. Co.**, Box 57, Ardmore, Okla., LB **$157,750.** Wing Headquarters and air base group headquarters bldg., Ardmore Airfield, Inv. No. Eng-34-066-53-84, ARDMORE, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Collins & Flood, McAlester, and Ardmore, Okla., engrs.-archts. CD 1/8.

Tellepsen Constr. Co., Box 2536, Houston, Tex., LB **$119,400,** Anahuac Pump Station;

Empire Builders Co., Navigation Blvd., Houston, Tex. LB **$124,736,** Turtle Bay Pump Station;

Brown & Root, Inc., Box 3, Houston, Tex., LB **$409,855,** intake canal levees, ANAHUAC, TEX. Chambers-Liberty Counties Navigation Dist., Anahuac, Tex. Bids Jan. 30. CD 12/30.

E. E. Farrow, 6100 Forest Park Rd., Dallas, Tex., LB **$126,177,** est. $35,000, concrete and c.i. water mains in Gonner Dr., Burton and Lake June Rds., DALLAS, TEX. City, City Hall, Main and Harwood Sts., Dallas, Tex. Koch & Fowler, 3900 Lemmon St., Dallas, Tex. engrs. Bids Feb. 7.

▲ **Robert E. McKee General Contractor, Inc.**, Box 651, Albuquerque, N.M., CA. **$2,864,900,** Lots 1, 2, 3 and 4, hangar maintenance, Biggs Air Force Base, Serial No. Eng 29-005-53-58, EL PASO, TEX. U. S. Eng., Box 1538, Albuquerque, N.M. Bids Jan. 20. CD 127 under LB.

Wade Lahar, Mountain Home, Ark., CA. **$547,770,** est. $558,000, clearing 4,650 acres land for San Jacinto Reservoir Dam Proj., HOUSTON, TEX., City, City Hall, 900 Brazos St., Houston, Tex., Bids Jan. 28. CD 2/4, under LB.

City, City Hall, 900 Brazos St., Houston, Tex; rejected bids Dec. 27, sanitary and storm sewers, Houston Harbor Addition, HOUSTON, TEX. LB **$60,420.** CD 1/8 under LB.

† **Tri-State Constr. Co.**, Amarillo, Tex., CA. **$216,696,** auditorium theater bldgs., KELLY AIR FORCE BASE, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 4/19/51.

† **U. S. Govt.**, c/o Contg. & Purch Officer, SAAMA, Kelly Field, San Antonio, Tex; rejected bids Nov. 25, gasoline storage and dispensing sys., Serial No. (IFB) 41-608-53-16-B. KELLY AIR FORCE BASE, TEX. LB **$116,471.** Project cancelled. CD 12/9, under LB.

Clyde Yarbrough, Odessa, Tex. LB **$73,335,** est. $68,-000, sanitary sewer extens. Hillside Addn., ODESSA, TEX. Kenneth E. Esmond, Courthouse Bldg., Odessa, Tex., consult. engr. Bids Jan. 27.

City, Odessa, Tex., Own Forces. **$65,000.** sanitary sewer interceptor line, ODESSA, TEX. CD 12/31.

City, Odessa, Tex., Own Forces. **$45,000,** some water mains replacement, ODESSA, TEX. CD 12/22.

Clyde Yarbrough, Odessa, Tex., LB **$40,226,** WW sys. and distr. line exten., Hillside Addn., ODESSA, TEX. City, Odessa, Tex. Kenneth E. Esmond, Courthouse Bldg., Odessa, Tex., consult. engr. Bids Jan. 27.

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., LB **$109,866,** Line G, storm drainage proj., TEXAS CITY, TEX. Town, Texas City, Tex. Charles R. Haile & Assoc., 2801 San Jacinto St., Houston, Tex., engrs. Bids Jan. 20.

Mann Constr. Co., 2700 S. Elati St., Engelwood, Colo., LB, **$81,807,** sewer lines, FLAGLER, COLO. Town, Flagler, Colo. Bids Jan. 29. CD 1/23.

† **Colorado Constructors, Inc.**, Maxwell, N. M., CA **$850,212,** dams and dykes for Vermejo Proj. rehabilitation, Spec. No. DC-3860, NEW MEXICO. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver, Colo. Bids Jan. 20. CD 1/27, under LB.

▲† **Allison & Haney**, 1412 N. Broadway, Albuquerque, N. M., LB **$1,598,762,** Item 1;

Miller & Smith, 500 W. Phoenix Ave., Albuquerque, N. M., LB **$2,150,000.** Item 3, water transmission lines, ALBUQUERQUE, N. M. City, Albuquerque, N. M. Southwestern Engineers, 109 S. Mesa St., Albuquerque, N. M., engrs. Bids Jan. 27. CD 10/8/51.

† **Lembke, Clough & King**, Box 245, Albuquerque, N. M. LB **$89,179,** est. $100,000. remote transmitter bldg. and remote receiver bldg., Walker Air Force Base, Inv. No. Eng-29-005-53-72, ROSWELL, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 29. CD 1/14.

▲† **J. W. Bateson Co., Inc.**, 1102 Irwin-Keasler Bldg., Dallas, Tex., CA. **$3,050,125,** Lots 1, 2 and 3, hangar maintenance, Serial No. Eng 29-005-53-59.,

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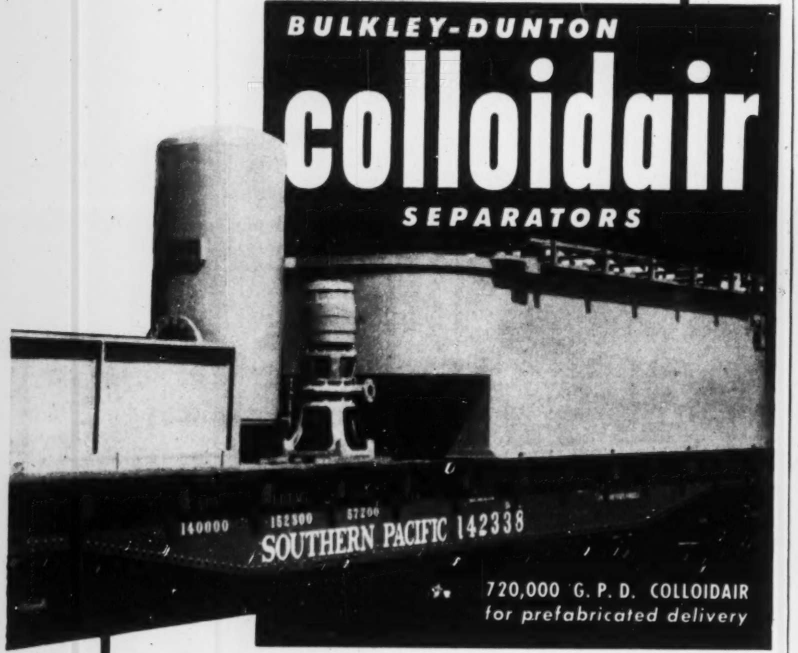

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Walker Air Force Base, ROSWELL, N.M. U.S. Eng., Box 1538, Albuquerque, N.M. Bids Jan. 13. CD 1/21, under LB.

† **Foster Constr. Co.**, Box 1429, Santa Fe, N. M., LB **$56,611.** addnl. water supply facilities, Walker Air Force Base, Inv. No. Eng-29-005-53-65, ROSWELL, N. M. U. S. Eng., Box 1538, Albuquerque, N. M. Bids Jan. 29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Weitz Co., Inc.**, 406 Fleming Bldg., Des Moines, Ia., CA. **$12,000,000.** 30,000 kw cap of two units STEAM GENERATING PLANT, MARSHALLTOWN, IA. Iowa Electric Light & Power Co., Security Bldg., Cedar Rapids, Ia. CD 9/7/51.

J. E. Dunn Constr. Co., 929 Holmes St., Kansas City, Mo. CA Est. **$675,000.** general contract FACULTY RESIDENCE, converting Sedgwick and Dowling Halls into STUDENT RESIDENCES, KANSAS CITY, MO. Rockhurst College, Very Rev. Maurice E. Van Ackeren, pres., 53 and Troost Sts., Kansas City, Mo. CD 12/17.

H. A. Dailey, Inc., 876 Hodiamont Ave., St. Louis 12, Mo. CA conversion 3 story, bsmnt., brick bldg. at southeast corner of 10 and St. Charles Sts., and annex into 5 story automobile parking GARAGE addn. at 908 St. Charles St., ST. LOUIS, MO. Mandel Investment Co., M. H. Mandel, pres., 901 Chestnut St., St. Louis, Mo. Neal J. Campbell, 911 Locust St., St. Louis 1, Mo., engr. CD 3/13/52.

▲ **Baldwin Co.**, Wallace Bldg., Little Rock, Ark., CA, **$3,000,000,** general contract 100,000 sq. ft., main section of aluminum. Fabrications PLANT, State Rd. 270, JONES MILL, ARK. General Motors Corp., Fabricast Div., Bedford, Ind. Bids Jan. 14. CD 1/6.

▲ **U. S. Eng.**, 1709 Jackson St., Omaha, Neb., rejected bids Dec. 29. construct, manage, finance Military HOUSING, Rapid City Air Force Base, Inv. 091-80002. RAPID CITY, S.D. LB **$6,334,000.** CD 1/12, under LB.

† **R. P. Farnsworth & Co., Inc.**, Box 650, New Orleans, La., LB **$208,741,** Unit 1, WAREHOUSE, Inv. No. Eng 34-066-53-63, FORT SILL, OKLA. U. S. Eng., Box 61, Tulsa, Okla., Bids Jan. 29. CD 1/14.

F. D. Hill Constr. Co., 1013 W. 14 St., Amarillo, Tex. LB **$190,160,** AUTO SERVICE, GARAGE, SALES, PARTS and used car lot paving, AMARILLO, TEX. Garner-Randall Motors, Inc., Amarillo, Tex. CD 1/22.

Troy Ragland, 1001 E. 46 St., Austin, Tex., LB **$119,950,** WAREHOUSE, PRINTING SHOP, STATIONERY STORAGE, AUSTIN TEX. Railey Paper Co. & Capitol Printing Co., 310 E. 4 St., Austin, Tex. Bids Feb. 6. CD 1/29.

J. L. Williams, George Hillyer & Chris Hubert, Bellaire, Tex. Own Forces. **$315,000.** 30 DWELLINGS, portion Job. No. 5, BAYTOWN, TEX.

Edgewood Building Corp., 4700 Block N. Lancaster St., Fort Worth, Tex., Owner Builds. **$350,000.** SHOPPING CENTER UNIT, FORT WORTH, TEX. CD 7/3.

Southwestern University, Georgetown, Tex. rejected bids Jan. 29, 31,000 sq. ft. Fondren SCIENCE BLDG and 2,200 sq. ft. McCook-Crain CLINIC BLDG., GEORGETOWN, TEX. LB **$419,000.** CD 1/21.

S. N. Adams & Co., 4001 Westheimer St., Houston, Tex., Purchase and Hire. **$848,000,** COMMERCIAL BLDG., HOUSTON, TEX. CD 2/5.

Robert E. Nesmith, Inc., 6738 Long Dr., Houston, Tex., CA, **$248,000.** TERMINAL, HOUSTON, TEX. Southern Express, Inc., 1508 Common St., Houston, Tex. CD 1/21.

Jimmy Puckett, 2512 W. Storey St., Midland, Tex., LB **$111,984,** est. $110,000. GAS BLDG., MIDLAND, TEX. West Texas Gas Co., Midland, Tex. CD 1/28.

▲ **Western State Mutual Life Insurance Co.**, c/o C. H. Neuhardt, archt., Midland, Tex., Separate Contracts. **$2,500,000.** OFFICE, MIDLAND, TEX. CD 2/4.

▲ **Hillin & Pickens**, 3641 Norfolk Rd., Fort Worth, Tex. CA. **$1,279,895,** 150 HOUSING units: **$2,538,600,** 300 housing units, MINERAL WELLS, TEX. Federal Housing Admin. (Housing and Home Finance Agency) Electric Bldg., Fort Worth, Tex. Bids Jan. 15. CD 1/20, under LB, Airports.

Mellwin Constr. Co., 35 S. Fox St., Denver, Colo., LB, **$318,270,** est. over $300,000 2 story, 21,400 sq ft. brick, structural tile Junior High SCHOOL, ROCKY FORD, COLO. Otera County School Dist. No. 4 Rocky Ford, Colo. Bids Jan. 26. Thomas & Sweet, 222 E. Bijou St., Colorado Springs, Colo., engr. and archts.

† **McAfee & Clark**, 1003 N. E. Ave. N. E., Albuquerque, N. M., CA. **$141,971,** MEDICAL-PERSONNEL Bldgs., Inv. No. 293-53-21, Sandia Base, ALBUQUERQUE, N. M. U. S. Atomic Energy Comn., Sandia Base, Albuquerque, N. M. Bids Jan. 29. CD 1/10.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲ **California**—B.A. After 2/18—Oakdale Irrigation District of Oakdale, and South San Joaquin Irrigation District of Manteca, Tri-Dam Project on Stanislaus River. International Eng. Co., Inc., 74 New Montgomery St., San Francisco, Zone 5, engr. CD 12/10.

† **Wash., Keyport**—B.A. 2/26—Pub. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, water pipe line at Naval Torpedo Station, Specs. 36462.

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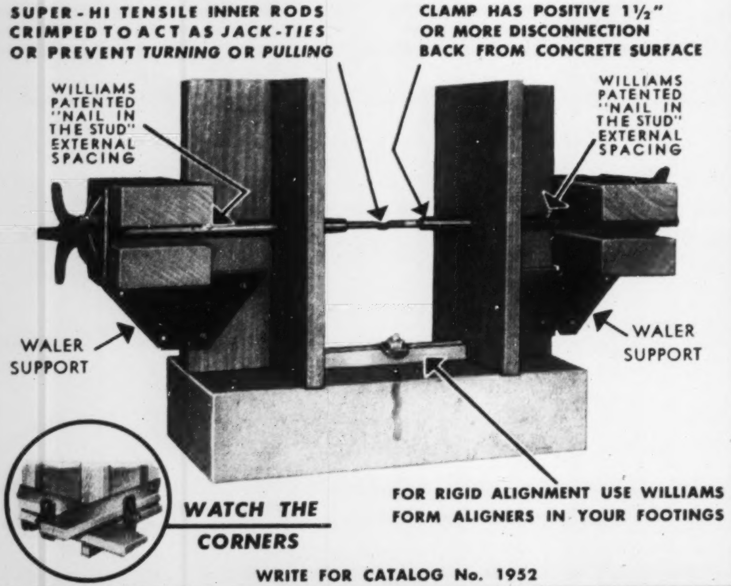
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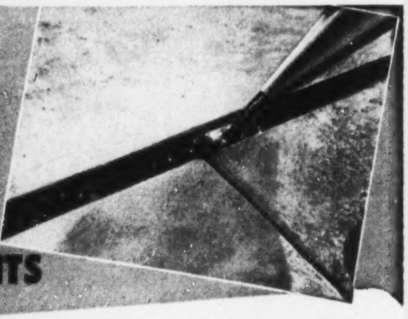

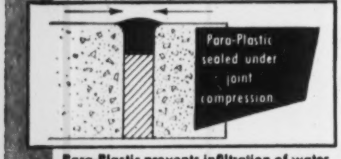

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† **Idaho, Mountain Home**—ELECTRICAL DISTRIBUTION, etc.—B.A. 2/27—U.S. Eng., City-County Airport, Walla Walla, Wash., electrical distr. and street lighting sys. Mountain Home Air Force Base. ENG 45-165-53-45. W. H. Mills, City-County Airport, Walla Walla, Wash., engr. CD 11/5/51.

† **Wash., Spokane**—DENTAL CLINIC—B.A. 2/27—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, 1 story, 5,166 sq. ft. frame dental clinic Fairchild Air Force Base, ENG 45-108-53-116. Extended date. CD 1/26.

† **Wash., Tacoma**—GRADING, etc.—B.A. 2/27—Dpt. Army, Purch & Contg. Officer, McChord Air Force Base, grading, surfacing 3,800 ft. road on Signal Hill, McChord Air Force Base, Inv. 53-49; 324 ft. 8 in. asbestos cement water tank blow-off line, Inv. 53-50, McChord Air Force Base. CD 7/27/51.

† **Wash., Everett**—POWER DISTRIBUTION CIRCUIT—B.A. 3/2—Dpt. Army, Purch & Contg. Officer, Paine Air Force Base, Everett, extending power distr. circuit, Inv. 53-31.

Calif., Laguna Beach—B.A. 3/3—Laguna Beach County Water Dist., 306 3 St., exten. water system for Water Dist. No. 4. $100,000. Received no bids Feb. 3. CD 1/21.

† **Wash., Spokane**—HEADQUARTERS—B.A. 3/3—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, headquarters bldg. addn., Fairchild Air Force Base, Inv. 53-108. Extended date. CD 1/23.

† **Wash., Whidbey Island**—OPERATIONS BLDG.—B.A. 3/3—Pub. Wks. Officer, Thirteenth Naval Dist., 1611 W. Wheeler St., Seattle, 1 and 2 story 41x202 ft. operations bldg. with 3 story, bsmnt. tower, and 52x70 ft. rein.-conc. central heating plant, Ault Field, Spec. 35605. Plans deposit $50.

▲† **California**—B.A. 3/5—Bureau Reclamation, Dpt. Interior, Folsom, constr. Sly Park Dam, Sly Park Unit, American River Division, Central Valley Proj., on Sly Park Creek in Eldorado Co. about 12 air line miles east of Placerville, Spec. DC 3888. CD 8/12.

† **Wash., Spokane**—RADIO and COMMUNICATIONS FACILITY—B.A. 3/5—U.S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, radio and communications facility, SAC 1,000, Fairchild Air Force Base, ENG 45-108-53-39. Plans deposit $25. CD 11/11, under LB.

BIDS ASKED—BUILDINGS

Calif., Los Angeles—B.A. 3/17—Economy Blueprint Co., 123 S. La Brea St., 3 story, rein.-con. bldg. $100,000. Pereira & Luckman, 9220 Sunset Blvd., archts.

SOON LETS CONTRACT—BUILDINGS

Calif., Klamath and Klamath Glen—HOUSING—Federal Housing Admin., R. W. Briggs, dir. 180 N. Montgomery St., San Francisco, soon lets contract 25-units of critical defense housing.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

IDAHO—State Hy. Dpt., Boise,

Brenner Constr. Co., Pocatello, Idano, LB, **$270,690** roadway 8.189 mi. Lost River Hy. from Reverse to Peoples' Canal, Bingham Co.;

Holmes Constr. Co., Heyburn, Idaho, LB, **$163,160** 6.474 mi. hy. in Orchard Valley Dist., Gooding Co. Bids Feb. 3. CD 1/22/46.

▲ **Kansas City Bridge Co.**, 928 Broadway, and **Massman Constr. Co.**, 20 W. 9 St., Kansas City, Mo., CA **$4,000,000**, lift railway bridge over Columbia River between Pasco and Kennewick 4.2 ft., shift span removing old piers and placing new lift span at Pasco, WASHINGTON, Northern Pacific Ry. Co., B. Blum, ch. engr., St. Paul, 1, Minn. CD 2/16/51.

† **L. & S. Constr., Inc.**, Box 466, Moses Lake, Wash., LB, **$92,747**, Schedule B, utilities, access road and railroad spur, Larson Air Force Base, ENG-45-165-53-30, MOSES LAKE, WASH. U.S. Eng., City-County Airport, Walla Walla, Wash. Bids Jan. 30. CD 1/12.

Arcorace & Co., 7947 Renton Ave., Seattle, Wash., LB, **$52,661**, water mains in Local Improvement Dist. 24, south of SEATTLE, WASH. Water District No. 20, c/o Gardner & Hitchings, Inc., engr., Arctic Bldg., Seattle, 4, Wash. CD 2/16/50.

† **M. J. Kuney Co.**, N120 Ralph St., Spokane, Wash., LB **$202,500**, est. $225,335, jet fuel facilities Geiger Air Force Base, Inv. 53-59, SPOKANE, WASH. U.S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Jan. 21. CD 1/17.

▲† **N. Fiorito Co.**, 844 W. 48 St., Seattle, Wash., LB, **$1,282,173**, 3 maintenance docks and apron paving McChord Air Force Base, Inv 53-82, TACOMA, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Feb. 6. CD 1/21.

† **Stolte, Inc.**, 8451 San Leandro St., Oakland, Calif., CA, **$798,119**, Schedule C, battalion shop bldg. and family housing, ENG 53-45, Spec. 1698, BEALE AIR FORCE BASE, CALIF. U.S. Eng., 1209 Eighth St., Sacramento, Calif. Bids Jan. 21, awarded Jan. 30. CD 1/27, under LB.

† **Bishop, Younger & Bradley**, 405 Sansome St., San Francisco, Calif., LB, **$156.855**, receiver and transmitter bldg., Eng. 04-203-53-133, CASTLE AIR FORCE BASE, CALIF. U.S. Eng. 180 N. Montgomery St., San Francisco, Calif. Bids Jan. 29.

† **Stanley Ball**, 1101 Westminster Ave., Alhambra, Calif., LB, **$131,190**, resurf. shoulder areas of runways grading surf. end of catapult, working and parking areas, NOY 76632, Spec. 37341, INYOKERN, CALIF. Officer-in-Charge of Constr., Bldg 981, P. Wks. Admin. Bldg., Naval Ordnance Test Station, Inyokern, Calif. Bids Jan. 27. CD 1/13.

Chas. T. Brown Co., 1955 6 St., San Fernando, Calif., LB, **$73,932**, est. $90,814, sewers, appurtenant work

(Continued on page 244)

SINCE 1907

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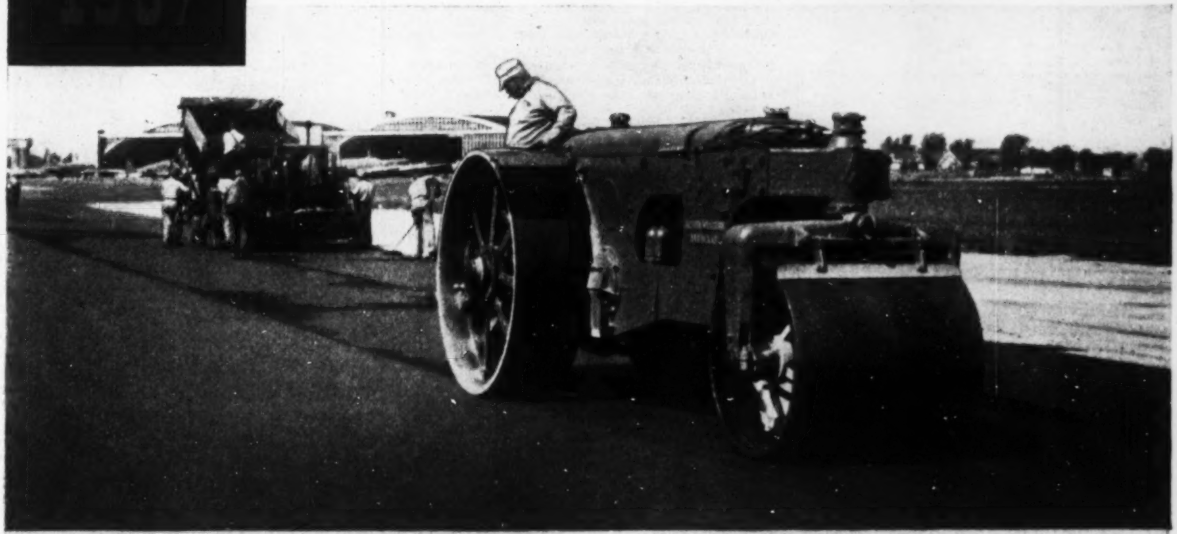

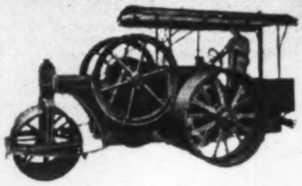

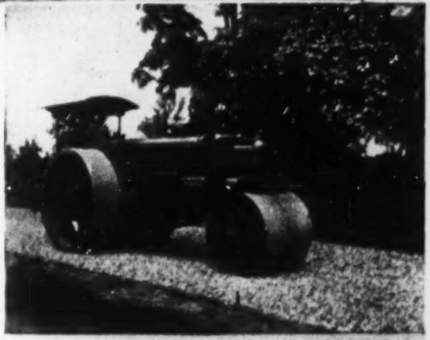

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(Continued from page 242)

in portions of Reedley St., Canterbury Ave. and Wentworth St., LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. CD 10/1.

▲ **R. A. Wattson Co.**, 12550 Saticoy St., North Hollywood, Calif., CA, **$1,411,772,** Eagle Rock-Hollywood Conduit Unit 3, LOS ANGELES, CALIF. Los Angeles Dpt. Water & Power, 207 S. Broadway, Los Angeles, Calif. Bids Jan. 21. CD 1/28, under LB.

† **Johnson & Mapes**, 540 Santa Cruz Ave., Menlo Park, Calif., CA, **$587,890,** operations bldg. and control tower, NOY 27955, MOFFETT FIELD, CALIF. Twelfth Naval Dist., San Bruno, Calif. Bids Jan. 7. CD 1/15, under LB.

† **San Francisco Bridge Co.**, 140 Montgomery St., San Francisco, Calif., LB, **$44,485,** 25,000 cu. yd. dredging of operating basin for AFDL-44, U.S. Naval Station, NOY 74116, Spec. 35151, SAN DIEGO, CALIF. P. Wks. Office, Twelfth Naval Dist., San Diego, Calif.

BUILDINGS

LOW BIDS AND CONTRACTS

Brunzell Constr. Co., 3945 Higuera St., Culver City, CA, **$629,979,** 33,800 sq. ft. Henderson SCHOOL, BARSTOW, CALIF. Barstow Union School Dist., 405 N. 2 St., Barstow, Calif. Bids Dec. 29, awarded Feb. 2. CD 1/8, under LB.

C. F. Von Gunden, 3737 E. Cajon Blvd., San Diego, Calif., CA, **$536,843,** est. $500,000, Lemon Grove Intermediate SCHOOL addn., LEMON GROVE, CALIF. Lemon Grove School Dist., 7850 Golden Ave., Lemon Grove, Calif. Bids Jan. 6. CD 1/15, under LB.

▲ **M. H. Golden Constr. Co.**, 3485 Noel St., San Diego, Calif., CA, **$1,123,000** Childrens Orthopedic HOSPITAL, LINDA VISTA (Br. San Diego), CALIF. Crippled Children Inc., Linda Vista, Calif. Bids Jan. 8. CD 1/14, under LB.

A. L. Gindling, 2960 Wilshire Blvd., Los Angeles, Calif., CA, **$950,400,** 144 stucco DWELLINGS, Buell, Cecilia, Gallion, Jersey and Maidstone Sts., NORWALK, CALIF. Floraday Park, Inc., 2960 Wilshire Blvd., Los Angeles, Calif.

† **Wohl-Calhoun Co.**, 845 N. Highland St., Los Angeles, Calif., CA, **$841,046,** electronics LABORATORY 125, for jet propulsion lab., California Institute of Technology, ENG 04-353-53-47, PASADENA, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Dec. 5. CD 12/15, under LB.

▲ **Trepte Constr. Co. & Guy F. Atkinson Co.**, 200 Kettner Blvd., San Diego, Calif., CA, **$3,267,000,** Donald H. Sharp Memorial Community HOSPITAL, SAN DIEGO, CALIF. San Diego Hospital Assn., San Diego Trust & Bank Bldg. San Diego, Calif. Bids Dec. 12, awarded Jan. 27. CD 12/22, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ **N. B., St. John—PIER EXTEN.—B.A. 2/27—National** Harbour Bd., West Block, Ottawa, Ont., Pier 23, extension, St. John Harbor. $1,000,000. Plans deposit $100. CD 4/21/49.

BIDS ASKED—BUILDINGS

Ont., Toronto—ADMINISTRATION—B.A. 2/25—Bd. Governors St. Michael's College, 50 St. Joseph St., 4 story part bsmnt., 60x170 ft., rein.-con., administration bldg. $500,000. Ernest Cormier, 3675 Cote des Neiges Rd., Montreal, Que., archt. and engr. Brennan & Whale, 30 Bloor St. W., archts. CD 10/2.

▲ **Alta., Lethbridge**—HOSPITAL—B.A. 3/18—Municipal Hospital Bd., Lethbridge, 187-bed hospital, 9 Ave., $2,500,000. Townley & Matheson, 1375 Hornby St., Vancouver, B. C., archts. CD 8/8/51, under LB.

Que., Montreal—FACTORY—Bids Asked—J. Robb & Co. Ltd., 4050 Namur St., 1 story, 50x200 ft., concrete, structural steel, brick factory. $90,000. Luke & Little, 1515 Crescent St., Montreal, Que., archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Toronto Iron Works Ltd., 629 Eastern Ave., Toronto, Ont., CA. **$80,280,** gasoline storage tanks at military base in Arctic, FROBISHER BAY, NORTHWEST TERRITORIES. Defence Constr. Ltd., 360 Homer St., Vancouver, B. C. J. L. Adams, c/o owner, regional engr. Awarded Jan. 15.

John Patterson Constr. Ltd., 23 Church St. W., Brampton, Ont., and **John Maguire Contg. Co. Ltd.**, 24 Birch Ave., Toronto, Ont., CA. **$150,000,** 1,830 84 in. and 860 ft. 36 in. rein.-con. pipe, appurtenances, filling old river channel, BRAMPTON, ONT. Etobicoke-Mimico Conservation Auth., Court House, Brampton, Ont. Bids Jan. 8, awarded Feb. 1. CD 12/17.

S. M. McNally & Sons Ltd., 215 Rosseau Rd., Hamilton, Ont., CA. **$142,290,** sewers in various streets, 4 by 5 ft. storm sewer in tunnel, HAMILTON, ONT. City, J. F. Berry, city clk., City Hall, Hamilton, Ont. Awarded Feb. 1. CD 1/6.

City Council, Mayor Allan Rush, London, Ont., Own Forces. **$200,000.** 30 in. transite pipe line with force main to connect with West End sewage disposal plant, LONDON, ONT. Roy Garrett, City Hall, London, Ont., city engr. Awarded Feb. 3. CD 6/12.

Oxford County, Woodstock, Ont., Dav Labor, **$123,344.** road reconstruction, WOODSTOCK, ONT. J. N. Wetherall, County Bldg., Woodstock, Ont., engr.

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BUILDINGS

LOW BIDS AND CONTRACTS

Capitanel Constr. Reg., 488 Notre Dame St., Cap de la Madeleine, Que., CA. **$575,000**, concrete, steel, brick stone ARTS and TRADES SCHOOL, QUEBEC CITY, QUE. Province of Quebec, Dpt. Youth & Social Welfare, Quebec City, Que. CD 3/3.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **J. C. Boespflug Constr. Co.**, 1912 Fourth Ave. S., Seattle, Wash., LB **$8,450,989**, 7 story hospital, Inv. 53-34, Elmendorf Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Feb. 6. CD 2/2.

▲† **Ben C. Gerwick, Inc.**, 112 Market St., San Francisco, 11, Calif., LB **$2,786,000**, 200x200 ft. control tower, 60 ft. high, 7,500 sq. ft. rein.-con., steel frame crashboat house; 1,500 ft. breakwater, dredging 1,500 ft. channel, 30x45 ft. utilities bldg., etc. Spec. 31620, KODIAK, ALASKA. P. Wks. Officer, 17th Naval Dist., Kodiak, Alaska. Bids Jan. 29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **S. Patti Constr. Co. & MacDonald Constr. Co.**, New Washington Hotel, Seattle 1, Wash., CA. **$5,639,853.** est. $5,566,694, 43 two-story bsmnt. frame bldgs. to provide 312 family dwelling units, Inv. 53-39, FORT RICHARDSON, ALASKA. U. S. Eng., Evergreen Hall, 3013 Arcade Bldg., Seattle 1, Wash. Bids Jan. 26. CD 1/30, under LB.

Proposed Projects

WATER SUPPLY

Ark., Fayetteville—City, City Hall, voted bonds, WW imprvs. $450,000.

▲ **La., Jennings**—City, City Hall, voted **$1,250,000** bonds water and sanitary sewer imprvs. **Barnard & Burk**, 1023 Nicholson Dr., Baton Rouge, consult. engrs. CD 12/19.

N. C., Mt. Airy—City, City Hall, bond election Feb. 24, WW imprvs. **$400,000**.

▲ **Tex., Houston**—City, City Hall, 900 Brazos St., water distr. lines, for northside areas not now having water, **$2,000,000**; water transmission lines, **$475,000**; lining West Canal in bringing water in from San Jacinto Reservoir, **$3,223,000**; future reservoir site clearing, **$500,000**; removal of pipe lines not originally though necessary, **$500,000** for San Jacinto Dam and Reservoir Proj. CD 2/6/52.

SEWERS, WASTE DISPOSAL

▲ **Calif., Long Beach**—City, City Hall, election Apr. 3 to vote on proposition to finance from tidelands oil revenue, De Forest Highway Project. **$4,000,000.**

Ga., Cairo—City, City Hall, sanitary sewerage imprvs. **$400,000.** Smith & Gillespie, P.O. Box 1048, Jacksonville, Fla., consult. engrs.

Ill., Granite City—City, Leonard Davis, mayor, City Hall, sanitary sewers in Nameoki section of city. $750,000. C. H. Sheppard, 9 E. Broadway, Alton, Ill., consult. engr. CD 8/17/45.

▲ **Md., Annapolis**—Anne Arundel Co. Sanitary Comn., Glen Burnie, sewage treatment plant, pumping station, 4 m.g., pumping capacity, Glen Burnie, **$1,500,000**, W. G. Munroe, Glen Burnie, co. engr.

Minn., Cloquet—City, J. W. Boyer, clk., voted **$550,000** bonds Jan. 19, sewage treatment plant.

Minn., Edina and Richfield (Minneapolis P.O.)—Village of Richfield P. H. Haugen, clk., Richfield, and Village of Edina, E. Bank, clk., Edina, trunk sewer 54 in. connecting sanitary sewerage sys. of 2 villages to Minneapolis trunk lines, Edina link-up at 53 St. and 29 Ave. south and Richfield link-up 62 St. and 26 Ave. south, **$431,624**, G. M. Orr Eng. Co., 1004 Marquette Ave., Minneapolis, consult. engrs.

BRIDGES

▲ **Mich., Detroit**—Bd. Rd. Comrs. Wayne Co., J. P. O'Hara, chn., 3800 Cadillac Tower, grade separation Projects, concrete, steel crossing at Hines and Inkster and Hines and Middlebelt. **$1,250,000**, Leroy Smith, 3800 Cadillac Tower, Detroit, engr.

▲ **Mich., Lansing**—City, City Council, $6,000,000 bond election Apr. 6, grade separation, rein.-con. bridge over Michigan Central R.R. tracks 90 ft. wide with 4 traffic lanes, dividing center area 14 ft. wide, East Saginaw St. **$1,000,000**, Foster Engineering Co., 804 Bauch Bldg., consult. engr. CD 3/3/52.

STREETS AND ROADS

▲ **Calif., Long Beach—City, City Hall, election Apr. 3,** to vote on proposition to finance from tideland oil revenue, incinerator, **$1,305,000**. CD 1/30/46.

▲ **Mich., Detroit**—Bd. Rd. Comrs. Wayne Co., J. P. O'Hara, chn., Cadillac Tower, resurf. b.-conc. James Cousens Hy. Seven Mile Rd. to Pilgrim and Eight Mile Rd. to Pilgrim, **$275,000**; resurf. Kelly between Seven

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Mo., St. Louis County—St. Louis County, County Council, Luman F. Matthess, superv., Court House, Clayton, Zone 5, wid'n., paving Page Ave. 5 mi. from Pennsylvania Ave. to Lindbergh Blvd. $400,000. Fred H. Kiburz, Court House, Clayton, co. engr. CD 1/16/52.

EARTHWORK, WATERWAYS

▲ **Texas**—Lower Rio Grande Auth., Weslaco diversion structure, 70-mi. long canal, partly lined and partly unlined near Brownsville, $18,000,000. Phillips-Carter Osborn, 602 Insurance Bldg., Denver, Colo., consult. engrs. and archts. CD 11/3.

Tex., Galveston—Galveston Wharves, 2402 Mechanic St., bulkhead, near Piers 39 and 40, steel sheet pile, 820 ft. long, concrete cap with top elevation 10½ ft. above mean tide. $800,000.

AIRPORTS

▲ **Calif., Long Beach**—AIRPORT IMPRVS.—City, City Hall, election Apr. 3 to vote on proposition to finance from tidelands oil revenue, airport imprvs. $3,500,000. CD 2/14/45.

▲† **Ia., Sioux City**—AIRPORT, etc.—U. S. Eng., 1709 Jackson St., Omaha, Neb., Sioux City Municipal Airport and incl. barracks and mess halls. $2,793,000. CD 12/7/51.

▲ **Okla., Tulsa**—SHOP—American Airlines, 100 Park Ave., New York, N. Y., expansion of maintenance shop. $1,500,000. C. R. Smith, c/o owner, engr.

PUBLIC BUILDINGS

▲ **Calif., Bakersfield**—SCHOOLS—Bakersfield City School Dist., Bakersfield, voted $2,431,000 bonds, schools.

▲ **Calif., Bakersfield**—SCHOOLS—Kern County Union High School & Junior College Dist., 1341 "F" St., voted $17,000,000 bonds, rehabilitate earthquake damaged schools. CD 1/8.

▲ **Calif., Long Beach**—CIVIC CENTER—City, City Hall, election Apr. 3 to vote on proposition to finance from tidelands oil revenue, civic center. $10,000,000. CD 12/6/44.

▲ **Calif., Long Beach**—HOSPITAL—City, City Hall, to vote Apr. 3 on proposition to finance from tidelands oil revenue hospital bldgs. $16,382,000.

▲ **Calif., Ontario and Upland**—SCHOOLS—Chaffey Union High School Dist., Ontario, voted $3,000,000 bonds, schools. CD 12/19.

Calif., Ontario—SCHOOLS—Ontario City School Dist., Ontario, voted $750,000 bonds, schools. CD 12/24.

▲ **Calif., San Bernardino**—SCHOOLS—San Bernardino City School Dist., San Bernardino, voted $1,750,000 bonds, schools. CD 12/5.

▲ **Calif., San Mateo**—SCHOOLS—San Mateo High School District, San Mateo, $4,000,000 bond election May 15, schools.

▲ **Ga., Atlanta**—PARKING GARAGE—State Office Building Auth., State Office Bldg., plans by Wm. J. Creighton, 1205 Spring St., N.W., underground auto parking garage $1,000,000.

▲ **Ill., Franklin Park**—SCHOOL—School District 212, 3400 Rose St., plans by Sobel & Stein, 450 E. Ohio St., Chicago, Zone 11, Leyden Twp. High School addn., modifications, 3400 Rose St. $2,500,000

▲ **Ill., Granite City**—SCHOOL, etc.—Granite City Community Unit, School District 9, Granite City, plans by Childs & Smith Co., 20 N. Wacker Dr., Chicago, high school, school addns. $1,000,000. CD 11/21.

▲ **Kan., Wichita**—COURT HOUSE—Sedgwick Co., Wichita, plans by Thomas & Harris, 321 W. 2 St., court house, $3,000,000.

▲ **Md., Baltimore**—HOUSING—Baltimore Housing Auth., 709 E. Eager St., plans by Wrenn, Lewis & Jencks, 113 W. Mulberry St., and Alex. S. Cochran, assoc. archt., 411 N. Charles St., Pratt Street Housing, incl. three 12 story apartments, 2 story, brick, block, masonry 400 housing units, Pratt and Albermarle Sts., $4,200,000, Egli & Gompf, Inc., 1019 N. Calvert St., mech. engr. Van Rensselaer Saxe, 1701 St. Paul St., struct. engr. Rummell, Klepper & Kahl, 1021 N. Calvert St., consult. engrs. CD 9/6/50.

▲ **Md., Owings Mills**—TRAINING SCHOOL—State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, sketches by Frederick A. Fletcher, 2119 N. Charles St., Baltimore, 1 story, brick, rein.-con., steel H-shaped Rosewood State Training School, gymnasium auditorium, $1,000,000, Alex. E. Forrest, 518 Cathedral St., Baltimore, struct. engr. Turpin, Wachter & Assoc., 1004 N. Charles St., Baltimore, consult. engrs.

▲ **Md., Rockville**—SCHOOLS—Montgomery Co., Bd. Educ., Rockville;
BETHESDA
Northwest Bethesda High School, **$1,500,000;**
Bethesda-Chevy Chase Senior High School auditorium, **$600,000;**
CEDAR GROVE
Cedar Grove Elementary School, **$300,000;**
CHEVY CHASE
Bradley Boulevard Elementary School, **$310,000;**
Grosvenor Lane Elementary School, **$350,000;**
COLESVILLE
Junior-Senior High School, **$750,000;**
FOUR CORNERS
elementary school north of Four Corners School, **$450,000;**
GAITHERSBURG
Gaithersburg High School addn., **$350,000;**
elementary school, **$340,000;**
GLENMONT
elementary school north of Weller Road School, **$420,000;**
HILLANDALE
Avenel Elementary School, **$340,000;**
KENSINGTON
Rock Creek Palisades Elementary School, **$300,000;**
POOLESVILLE
plans by R. L. Senseman, 327 Carroll St. N.W., Wash., D. C., Poolesville High School addn., **$340,000;**
ROCKVILLE
plans by McLeod & Ferrara, 1741 DeSales St. N.W., Wash., D. C., Carver High School addn., **$480,000;**
plans by A. Hamilton Wilson, 1022 20 St. N.W., Wash., D. C., West Rockville Elementary School, **$440,000;**
South Rockville Elementary School, **$330,000;**
SILVER SPRING
Montgomery Blair Senior High School auditorium, **$600,000;**
Eastern Junior High School addn., **$300,000;**
WASHINGTON GROVE
Washington Grove Elementary School, **$310,000;**
WHEATON
plans by A. Hamilton Wilson, 1022 20 St. N.W., Wash., D. C., Connecticut Avenue Park Elementary School, **$485,000;**
elementary school north of Connecticut Ave. Park School, **$430,000;**
North Wheaton Junior High School, **$1,500,000;**
Randolph Hills Elementary School, **$420,000;**
South Wheaton Junior High School, **$850,000;**
West Wheaton Junior High School, **$1 500,000;**
Wheaton High School auditorium, **$600,000.**

Mass., Newbury—SCHOOL—Town, Elementary School Bldg. Com., School Dpt., plans by Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, masonry elementary school, Middle Rd. **$500,000.**

▲ **Mass., Newton**—SCHOOL—City, School Dpt., 40 Elm Rd., plans by Howard L. Rich and Herman F. Tucker, 45 Newbury St., Boston, Meadowbrook Junior High School, **$2,500,000.**

▲ **Mass., Watertown**—SCHOOL—Town, School Bldg. Comn., F. J. Kelly, c/o School Dpt., plans by Collens, Willis & Beckonert, 20 Newbury St., Boston, Junior High School, Mount Auburn St. **$1,719,250.** CD 4/28/52.

Mass., Wilmington—SCHOOL—Town, Supt. schools, plans by Thomas Hixon Co., 1150 Commonwealth Ave., Allston, 1 story, brick, steel, concrete 2 wings elementary school, Wildwood St., **$543,000,** Albert Goldberg, 739 Boylston St., Boston, consult. engr. CD 7/30/52.

Mich., Clawson—SCHOOL—City, Bd. Educ., Signor Peterson, secy., plans by Lowell Price, Royal Oak, 2 story, bsmnt., brick, steel high school, **$820,000.** CD 12/4.

▲ **Mich., Coldwater**—HOSPITAL—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete 150-bed general hospital unit, **$1,500,000;** gymnasium, **$1,000,000;** brick, concrete institution vocational training school, **$400,000;** remodeling power plant, **$335,000,** Coldwater State Home and Training School, CD 9/21/50.

▲ **Mich., Flint**—City Hall, etc.—City, City Comn., bond election Apr. 6, city hall, police-fire headquarters, public health bldg., central garage, separate vehicle repair bldg. **$5,208,000** CD 1/16/47.

▲ **Mich., Kalamazoo**—THERAPY, etc.—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, concrete occupational therapy, **$645,000;** central heating plant for high colony, **$560,000,** Kalamazoo State Hospital. CD 1/16/51.

▲ **Mich., Kalamazoo**—GYMNASIUM—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete gymnasium, Western Michigan College, **$2,950,000.** CD 10/5/51.

▲ **Mich., Lapeer**—SCHOOL and VOCATIONAL—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, brick, steel, concrete school and vocational bldg., Lapeer Home and Training School. **$1,000,000.** CD 8/25/44.

▲ **Mich., Newberry**—THERAPY etc.—State, A. N. Langius, dir. State Bldg. Dpt., Lansing, occupational therapy bldg., **$1,000,000;** brick, concrete school facilities incl. classrooms, shop dpts., recreation rooms, **$690,000;** brick, concrete detention facility, **$385,000,** Newberry State Hospital.

▲ **Mich., Northville**—CHILD CENTER—State, A.N. Langius, dir. State Bldg. Dpt., Lansing, brick, masonry (mental) child center, incl. cottages, school rooms, gymnasium, activities and staff bldgs., offices, Northville State Hospital, **$1,200,000.** CD 1/16/51.

Mich., Pontiac—CITY HALL—City, Ada R. Evans, clk., plans by Leo J. Heenan, 15 Carlton Court, 2 story, brick, steel city hall, **$500,000.**

▲ **Minn., Robbinsdale**—SCHOOL—Bd. Educ., R. J Parish, clk., plans by Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis, Senior High School between 36 and 38 Aves. north and between Regent and Toledo Aves. **$1,000,000.**

▲ **Mo., Brentwood (St. Louis 17 P.O.)**—SCHOOL—Brentwood Bd. Educ., B. George Saltzman, supt. Schools, voted **$1,000,000** bonds, elementary school

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Mo., Normandy (St. Louis 21, P.O.)—SCHOOL—Normandy Consolidated School Dist., Bd. Educ., W. E. Barnes, supt. Schools, 7837 Natural Bridge Rd., Zone 21, **$600,000** bond election Feb. 10, Junior High School addn. Kenneth E. Wischmeyer, 911 Locust St., St. Louis, Zone 1, archt.

▲ **Mont., Butte**—SCHOOL—Bd. Educ., Butte, Junior High School. **$2,000,000.**

▲ **Neb., Hastings**—HOSPITAL—State Bd. Control, Capitol Bldg., Lincoln, Hastings State Hospital addns. **$1,358,000.** CD 10/29.

Neb., Lincoln—HOSPITAL WARD—State Bd. Control, Capitol Bldg., Lincoln, tuberculosis ward bldg. for criminal insane at State Hospital **$720,000.**

▲ **N. H., Concord**—HIGH SCHOOL—City, Harlan E. Atherton, supt., Concord, plans by Architects Collaborative, 96 Mt. Auburn St., Cambridge, Mass., Senior High School **$1,500,000.** CD 1/16/52.

O., Urbana—COURT HOUSE—Comrs. Champaign Co., Urbana, plans by Philip T. Partridge, 914 Main St., Cincinnati, Zone 2, court house, **$650,000.** CD 11/7.

▲ **Ore., Eugene**—MEMORIAL HALL—State Bd. Higher Educ., Corvallis, plans by Church, Newberry & Roehr, Builders Exchange Bldg., Portland, 300-man Straub Memorial Hall addn., University of Oregon, **$1,250,000.** CD 12/18/50.

▲ **Ore., Portland**—DENTAL SCHOOL—State Bd. Higher Educ., Corvallis, plans by Lawrence, Tucker & Wallmann, Failing Bldg., Dental school at University of Oregon Medical School. **$2,200,000.** CD 1/29/51.

▲ **Pa., Berwyn**—HIGH SCHOOL—Easttown & Tredyffrin Twp Joint School Auth., Berwyn, plans by Howell, Lewis Shay, Packard Bldg., Senior High School. **$1,000,000.** CD 12/10/45.

▲ **Pa., Phila.**—HOUSING—Phila. Housing Auth., 42 S. 15 St., plans by Howell Lewis Shay, Packard Bldg., North Allen Proj., 10 and Poplar Sts. **$3,000,000.** CD 9/12/49.

Pa., Souderton — SCHOOL — Boro, Souderton, school addn. **$600,000.**

S. C., Chester—HIGH SCHOOL—Chester Co. Bd. Educ., Chester, plans by Gilchrist & Cook, Rock Hill, high school. **$600,000.** CD 12/13/51.

▲ **Tex., Houston**—SCHOOLS—Houston Independent School Dist., 1600 Washington St., plans by Milton McGinty, co-ord. archt. 2425 Ralph St., Senior High School, Bellaire area, **$1,000,000;** Junior High School, Yellowstone Blvd. and Scott St. **$750,000;** elementary school, Avery and Nunn Sts., in Overbrook-Golf View Manor Addn. **$550,000;** Eastside Elementary School, MacGregor Terrace Southern Village area, **$650,000;** Senior High School, Tidwell Rd. area, **$975,000;** Junior High School, Garden Villas area at Bellfort and Chaffin Sts., East End, **$650,000;** Elementary School, Stella Link Rd., **$875,000;** Durkee Elementary School, **$600,000.** CD 12/1.

▲ **Tex., San Antonio**—COURT HOUSE, etc.—Bexar Co., Court House, court house, **$4,500,000;** jail, **$1,000,000.**

Tex., Tyler—COURT HOUSE—Smith Co., Court House, Tyler, court house, **$500,000.**

Va., Alexandria—SCHOOL—School Bd., 208 N. Columbus St., plans by Joseph H. Saunders, Jr., 121 S. Columbus St., 1 and 2 story part rein.-conc. and part masonry Minnie Howard School, Braddock, Rd. **$750,000.**

▲ **Va., Williamsburg**—DINING HALL—State Hospital Bd., 309 N. 12 St., Richmond, plans by Baskerville & Son, 2313 W. Cary St., Richmond, brick, concrete masonry kitchen and dining hall, Eastern State Hospital, **$1,500,000.** CD 11/19.

▲ **B. C., Vancouver**—POLICE STATION—City, City Hall, plans by Tounley & Matheson, 1376 Hornby St., 4 story rein.-con. police station, Cordova and Main Sts. **$1,000,000.** CD 11/17/50.

Man., Winnipeg—APARTMENT—Central Mortgage & Housing Corp., 400 Kensington Bldg., apartment, at Fort Osborne Barracks. **$700,000.**

▲ **N. S., Sydney**—HOSPITAL—Cape Breton County Hospital Bd, Court House, plans by Davison, Duffus, Romans & Davis, 195 Dresden Row, Halifax, mental hospital in Northern Cape Breton, Approx. **$2,225,000.** CD 7/13/51, under LB.

N. S., Sydney—JAIL—Cape Breton Co., T. Sullivan, warden, Sydney, jail. **$600,000.**

▲ **Ont., Chalk River**—REACTOR, etc.—Govt. of Canada Chalk River Atomic Energy Comn., Chalk River, reactor and auxiliary buildings. **$7,365,540** voted.

COMMERCIAL BUILDINGS

Colo., Boulder—SANITARIUM—Boulder Sanitarium & Hospital Assn., Boulder, plans by E. Floyd Redding, consult. engr. and archt., 7970 W. 10 Ave., Denver, Zone 15, 5 story, brick, steel Boulder Sanitarium. **$800,000.**

▲ **Del., Wilmington**—OFFICE—Atlas Powder Co., Delaware Trust Bldg., office. **$2,500,000.**

▲ **Del., Wilmington**—HIGH SCHOOL—Salesianum School for Boys, 805 West St., plans by Gleeson & Mulrooney, Fox Bldg., Phila., Pa., high school **$2,000,000.** CD 12/1/47.

▲ **D. C., Wash.**—OFFICE—Owner, c/o Corning & Moore, archts., 1726 M. St. N. W., 14 story office, Comm. Ave. and K Sts. N. W. **$2,000,000.**

Ill., Evanston—OFFICE, etc.—General Finance Corp., 184 W. Lake St., Chicago, Zone 1, plans by Bertram A. Weber, 221 N. La Salle St., Chicago, Zone 1, 1, 2 and 3 story, steel, concrete office and parking, **$500,000.**

▲ **Ill., Evanston**—DORMITORY, etc—National College of Educ., 2840 Sheridan Rd., plans by Bertram Weber 221 N. La Salle St., Chicago, Zone 1, 3 story girls dormitory, **$850,000;** Memorial Gymnasium, **$400,000;** 2 story childrens school, **$500,000.**

▲ **Me., Brewer**—RESIDENTIAL DEVELOPMENT—Brewer Garden Homes, Inc., c/o L. N. Lechter, designer, 8 Marie Ave., Sharon, 235 units, residential development. **$1,900,000.**

Mass., Boston—APARTMENT—First Realty Co. of Boston, Inc., 18 Tremont St., plans by Samuel Glaser Assoc. & Hugh Stubbins, Jr., 105 Newbury St., 8 story bsmnt., masonry apartment, incl. 50 suites, **$700,000.**

N. Y., Brooklyn—APARTMENT—Jacob Morrow, 335 Broadway, Lawrence, and Al Derechin, 414 Albemarle Rd., Brooklyn, plans by S. Gardstein & Son, 50 Court St., Zone 2, 6 story apartment, 14-34 Webster Ave. **$500,000.**

N. Y., Edgemere—APARTMENT—Oceancrest Estates, c/o Kavy & Kavovitt, archts., 44 Court St., Brooklyn, Zone 2, 6 story apartment, Beach Channel Dr., east of Beach 32 St. **$756,000.**

N. C., Charlotte—CHURCH—Trinity Presbyterian Church, c/o J. N. Pease & Co., archts., 119½ E. 5 St., church. **$500,000.**

O., Columbus—HOSPITAL—St. Anthony's Hospital, 1555 Bryden Rd., plans by Louis F. Karlsberger, 630 E. Broad St., 2 story, brick, concrete, steel hospital addn. for 60 patients, with walls of 2 more floors for later constr. **$960,000.**

▲ **O., Steubenville**—ADMINISTRATION, etc.—Franciscan Order, College of Steubenville, Steubenville, plans by Michael Baker, Jr., The Baker Bldg., Rochester, Pa., administration, science and liberal arts bldgs. **$5,000,000.**

Okla., Ardmore—HOSPITAL—Southern Oklahoma Memorial Foundation, Ardmore, plans by Harold Flood, Ardmore, 4-story hospital. **$500,000.** CD 1/2.

▲ **Pa., Clifton Heights**—SHOPPING CENTER—Oak Park Shopping Center, c/o Harcourt Realty Corp., Empire State Bldg., New York, N. Y., plans by Kelly & Gruzen, archts.-engrs., 80 Fifth Ave., New York, N. Y., shopping center, department stores, etc., 68 stores, restaurant, **$7,000,000.**

Pa., Drexel Hill—HOSPITAL—Delaware County Hospital, Lansdowne and Keystone Aves., hospital addn. **$500,000.**

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▲ **Pa., Haverford**—CLASSROOM, etc.—Haverford College, Haverford, classroom bldg., dormitory, laboratory bldg. alterations, **$500,000**; dormitory bldg., **$300,000**; field house, **$350,000.**

▲ **Pa., Morrisville**—CHURCH, etc.—St. Michael The Archangel R. C. Church, 1025 Radcliffe Rd., Bristol, plans by James A. Nolen, Jr., 1649 N. Broad St., Phila., church, admin. bldg., high school, parochial school, convent and rectory, **$3,500,000.**

Pa., Penndel—HOSPITAL—Owner, c/o I. Louis Rubin, 327 Mill St., Bristol, hospital. **$500,000.**

Pa., Phila.—BANK—Albert M. Greenfield & Co., 1325 Walnut St., plans by Thalheimer & Weitz, 1315 Walnut St., bank and commercial development of stores, Castor Ave. and Cottman St. **$500,000.** CD 10/31/49.

▲ **Pa., Phila.**—SHOPPING CENTER, etc.—Melrose Park Gardens, Front and Godfrey Aves., shopping center and parking area. **$8,000,000.**

▲ **Pa., Phila.** — HOTEL, SHOPPING CENTER, etc.—Pennsylvania R.R., J. L. Gressitt, ch. engr., Broad St. Station Bldg., 1617 Pennsylvania Blvd., Phila. 4, Pa., and City Investing Co., 25 Broad St., New York, N. Y., hotel, shopping center, four office bldgs., and garage "Penn Center" Development, **$75,000,000-$100,000,000.**

Pa., Swarthmore—APARTMENT—Arthur W. Binns, Inc., 2221 Chestnut St., Phila., plans by Edwards & Green, 17 S. 5 St., Camden, N. J., apartment and parking area. **$850,000.** CD **1/22.**

▲ **Tex., Houston**—MERCANTILE—Joske's of Houston, 407 Main St., suburban mercantile, Gulf Freeway and LaPorte Expressway, **$2,500,000.**

▲ **N. S., Dartmouth**—APARTMENT HOUSE DEVELOPMENT—Montreal Trust Co., 190 Hollis St., Halifax, concrete, brick apartment house development around Maynard's Lake. **$2,000,000.**

▲ **Ont., Oakville**—DWELLINGS—Skyline Builders Ltd., 135 Raglan Ave., Toronto, plans by G. Bageley, 193 Forest Hill Rd., Forest Hill, 200 dwellings at Brantdale area. **$2,000,000.**

INDUSTRIAL BUILDINGS

▲ **Calif., Torrance**—ROLLING MILL—Harvey Machine Co. Inc., 19200 S. Western Ave., Torrance, aluminum rolling mill, **$20,000,000.**

▲ **Ill., McCook**—Mill—Reynolds Metals Co., 47 and 1 Ave., aluminum rolling mill addn. **$7,500,000.** Verne E. Alden, 33 N. La Salle St., Chicago, Zone 2, consult. engrs.

Kan., Kansas City—PLANT—Owens-Corning Fiberglas Corp., Nicholas Bldg., Toledo, O., plant expansion Fairfax Industrial Dist. **$500,000.** Harry Smith, c/o owner, ch. engr.

Mass., Worcester—BAKERY—Table Talk Pastry Co., Inc., 153 Green St., bakery addn. **$500,000.** E. Whitehead, Inc., 97 Webster St., Worcester, consult. engr.

Mo., Kansas City—WAREHOUSE, etc.—Richards & Conover Hardware Co., Fifth and Wyandotte Sts., Kansas City, Mo., plans by Harry L. Wagner, 15 W. 10 St., Kansas City, Mo., warehouse and office on 155,000 sq. ft. site, 14 and Askew Sts. **$500,000.**

▲ **N. H., Newington**—PLANT—Simplex Wire & Cable Co., 79 Sidney St., Cambridge, Mass., 1 story, 250x360 ft. mfg. plant, 120x220 ft. test bldg., steel frame constr. off Rte. 16. **$1,000,000.** Charles T. Main, Inc., 80 Federal St., Boston, Mass., consult. engr. CD 1/7.

▲ **N. J., Camden**—INSTRUMENT BLDG., etc.—R.A.A. Victor Div., Radio Corp. of America, Front and Cooper Sts., Camden, plans by Oren Thomas & Assocs., 122 Haddon Ave., Collingswood, home instrument bldg., **$600,000**; engineering bldg. and cafeteria, **$2,500,000**; service and entrance bldg., **$1,500,000**; model shop and warehouse, **$800,000,** Ellisburg. CD 12/19/46.

N. J., Cape May Court House—SERVICE—Atlantic City Electric Co., Kentucky and Pacific Aves., Atlantic City, plans by Donald Rosenstein, Guarantee Trust Bldg., Atlantic City, service bldg. **$750,000.**

N. C., Shelby—GRAIN ELEVATOR—Cleveland Storage & Elevator Co., Shelby, grain elevator. **$500,000.**

▲ **N. C., Wilmington**—PLANT—Babcox & Wilcox Co., 85 Liberty St., New York 6, N. Y. plant. **$2,000,000.**

Pa., Spring Mills—FACTORY—Owner, c/o The Ballinger Co., archt., 121 N. Broad St., Phila., factory addn., alterations. **$500,000.**

▲ **Tenn., Memphis**—COLD STORAGE—Memphis Packing Co. (Div. of Armour & Co., Union Stock Yards, Chicago 9, Ill.) 1337 Riverside Blvd., Memphis, cold storage and meat processing bldg. **$1,000,000.**

Tex., Baytown—PLANT—Gulf Alkali Corp., 509 Madison Ave., New York, N. Y., salt brine plant, 154-acre tract. **$500,000.**

▲ **Tex., Houston**—AUTO AGENCIES—General Motors Corp., 2323 Polk St., First Automobile Agency, to incl. shop, service, parts dept., sales, etc. for Cadillacs, 85,000 sq. ft. Westheimer and Wesleyan, **$600,000;** 2nd Automobile Agency, (Buick), W. M. Dickey tract, **$450,000;** 3rd Automobile Agency (Chevrolet), Westheimer Rd. and Shepherd Dr., **$500,000.**

Wash., Vancouver—GRAIN ELEVATOR—Spokane, Portland, & Seattle Ry. Co., C. F. Thomas, ch. engr., 1101 N.W. Hoyt St., Portland 7, Ore., grain elevator addn. **$500,000.**

▲ **B. C., Prince George**—BREWERY—Nechako Brewing Co. Ltd., 163 W. Hastings St., Vancouver, plans by Semmens & Simpson, 1472 W. Pender St., Vancouver, brewery. **$1,500,000.**

N. S., Sydney—MACHINE SHOP—Dominion Steel & Coal Corp., Canada Cement Bldg., Montreal, Que., 1 story, 135x350 ft., concrete, structural steel, brick machine shop. **$800,000.**

▲ **Ont., Ojibway**—SALT MINE—Canadian Salt Co., Ltd., 625 Dorchester St. W., Montreal, Que., salt mine, incl. crashing, screening and packaging warehouse, power house, 750 ft. long wharf, 1½ mi. railway siding, roads, etc. **$5,000,000.** General Engineering Co. Ltd., 100 Adelaide St. W., Toronto, consult. engrs.

Que., St. Felicien—MILL—John Murdoch & Assocs., 25 Racine St., Chicoutimi, pulp and paper mill **$500,000.**

UNCLASSIFIED

▲ **Calif., Long Beach**—PARK IMPRVS.—City, City Hall, election Apr. 3 to vote on proposition to finance from tidelands oil revenue, aquisition of land and park imprvs., **$6,750,000;** marine and yacht harbor in Almitos Bay, **$10,000,000.** CD 4/26/46.

Calif., San Diego—TELEVISION STATION—T. B. C. Television, Inc., 948 Third Ave., television station. **$689,000.** L. N. Papernow, c/o owner, consult. engr.

Calif., San Francisco—TELEVISION STATION—General Teleradio Inc. (KFRC), 1313 N. Vine St., Hollywood, television station. **$646,000.**

Calif., Stockton—TELEVISION STATION—KXOB, Inc., Hotel Stockton, television station. **$515,500.** McIntosh & Inglis, Wyatt Bldg., Wash., D. C., consult. engrs.

Conn., Hartford—TELEVISION STATION—Connecticut State Bd. Educ., State Office Bldg., television station. **$514,400.** Craven Lohnes & Culver, Munsey Bldg., Wash. 4, D. C., consult engrs.

Fla., Miami—TELEVISION STATION—East Coast Television Corp., c/o E. Albert Pallot, Du Pont Bldg., television station. **$643,200.** Vandivere, Cohen & Wearn, Evans Bldg., Wash., 5, D. C., consult. engrs.

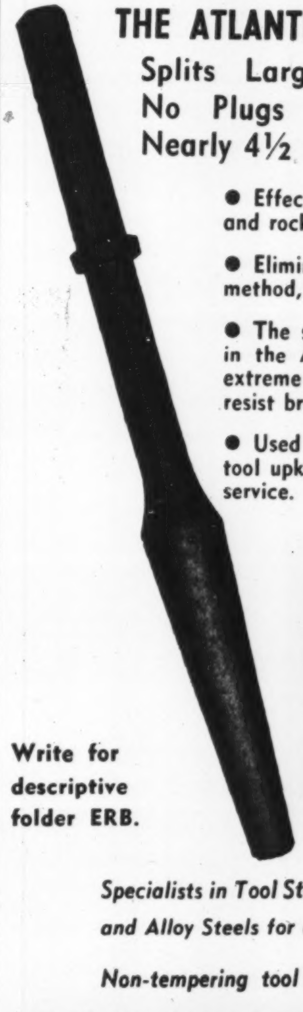
Kan., Wichita—TELEVISION STATION—WKY Radiophone Co., Box 8668, Barton Station, Oklahoma City, Okla., will not construct television station. **$847,000.** Project abandoned. CD 9/15/52.

N. H., Mount Washington—TELEVISION STATION—Owners, c/o H. A. Hildreth, pres. Bucknell University, Lewisburg, Pa., television station. **$750,000.**

▲ **Texas, New Mexico, Arizona, California**—GAS LINE—El Paso Natural Gas Co., Bassett Tower, El Paso, Tex. 1,778 mi. gas transmission line, **$175,250,000;** 161,860 h.p. compressor units for gas line, **$12,500,000.** CD 7/20/50.

▲ **Texas**—OIL PIPE LINE—Humble Oil & Refining Co., Humble Bldg., Houston, 55 mi. 18 in. welded joint crude oil line from Longview area east to Louisiana State line, **$1,500,000;** 53 mi. 16 in. welded joint crude oil line between Hawkins and Longview, Gregg and Wood Counties, **$1,350,000.**

▲ **Tex., Houston**—UNDERGROUND GARAGE—City, City Hall, 900 Brazos St., underground parking garage beneath city hall reflecting pool. **$1,000,000.**



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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Me., Bangor**—B.A. 2/27—Dist. P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., repair and sealcoat roads, U. S. Naval Reserve Training Center, NOY 75885, Spec. 36654. Plans deposit $10.

† **Vt., Burlington**—B.A. 2/27—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., installing, repairing dolphins and bollards, at U. S. Naval and Marine Corps Reserve Training Center, NOY 75882, Spec. 36651. Plans deposit $10.

BIDS ASKED—BUILDINGS

† **R. I., Warren**—ARMORY—B.A. 2/26—U. S. Property & Disbursing Officer, 51 Stenton St., Providence, 1 unit, armory, 1 story, 103x136 ft., brick, steel, concrete, between Market and Wood Sts., adjacent to Jamiel Park, Inv. ENG-37-019-52-1. $150,000. Plans deposit $10. Joseph M. Mosher, 77 Washington St., Providence, archt. CD 12/2.

† **Vt., Colchester**—VEHICLE STORAGE—B.A. 3/4—U. S. Purch. & Disbursing Officer for Vermont, Bldg. 1000, Fort Ethan Allen, 1 story, 50x100 ft. brick, cinder block motor vehicle storage bldg., Camp Johnson. Plans deposit $10. Whittier & Goodrich, 215 College St., Burlington, archts.

▲ **Mass., Mansfield**—SCHOOL—B.A. 3/5—Town Bd. Educ., G. W. Anderson, supt. Schools, Six Year High School, Hope and East Sts., adjoining Memorial Park, $1,595,000. Howard L. Rich & Herman F. Tucker, 45 Newbury St., Boston, Mass., archts. CD 5/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Luria Eng. Co., Div. of Luria Steel & Trading Corp.**, 500 Fifth Ave., New York, 36, N. Y., CA, **$500,220**, furnishing fabricating structural steel for 7 hangars, Limestone Air Force Base, Eng 19-016-53-68, LIMESTONE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, 15, Mass. Bids Jan. 13.

Peter J. **Popiclaczyk**, 1146 East St., New Britain, Conn., CA, **$71,780** sanitary and storm sewers, Slater Rd. and Osgood Ave., NEW BRITAIN, CONN. City Bd. P. Wks., City Hall, New Britain, Conn. Hubbard-Lawless & Blakeley, 110 Whitney Ave., New Haven, Conn., engrs. CD 8/2/45.

† **Cashman Bros. Co.**, 75 Water St., Newburyport, Mass. LB **$136,640**. constr. Katahdin Hill and Reservoir Hill laboratory complexes, relocation of new bldgs., Hanscom Airport, CA 3-59, BEDFORD, MASS. Dpt. Air Force, 230 Albany St., Cambridge, Mass. Bids Feb. 2. CD 1/27.

Old Colony Constr. Co., Vernon St., Quincy Mass. LB Proposal A **$294,604**, Proposal B **$271,408**. Proj. 195 furnish, laying water pipes, Commonwealth Ave., Newton, BOSTON, MASS. State, Metropolitan Div., 20 Somerset St., Boston, Mass. Bids Feb. 5. CD 1/19.

VERMONT—State Hy. Dpt., State Office Bldg., Montpelier,

Lewis & Scott, 47 Haverhill St., Andover, Mass., LB **$83,454**, est. $80,000, highway constr., F 112 (5), Bradford;

Earl & Merry, Inc., 42 Burnham Ave., Rutland, Vt., LB **$225,861** est. $200,000. highway constr., F 65 (9) and U 65 (10) 1, Rutland. Bids Feb. 6. CD 1/27.

BUILDINGS

LOW BIDS AND CONTRACTS

William M. Bailey Co., 209 Washington St., Boston, Mass., CA, **$150,000**, TANNERY, MONSON, MASS. A. D. Ellismills, Monson, Mass. Alonzo B. Reed, 88 Broad St., Boston, Mass., engr. and archt.

ndustrial Constr. Co., 120 Prospect Ave., Hartford, Conn., CA, **$500,000**, DORMITORY, Summit St., HARTFORD, CONN. Trinity College, c/o Dr. Arthur H. Hughes, acting pres., Hartford, Conn. Bids Jan. 29. CD 1/20.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

NEW JERSEY—B.A. 3/2—N. J. Hy. Auth., Office Bldg., 1035 Parkway Ave., Trenton,

Monmouth Co.—stabilization, grading, drainage, paving, foundations Garden State Parkway, Contract No. 19, Sect. 7 from Pinebrook Road to West Front St., Borough of New Shrewsbury and Twp. of Middletown. Plans deposit $10.

▲ **NEW YORK**—B.A. 3/5—B. D. Tallamy, supt. State Dpt. P. Wks., State Office Bldg., Albany,

Chemung Co.—elimination of railroad grade crossings at Chemung and Sayre Sts. in Horseheads and construction with -b. conc. of twin 24-ft. arteries, separated by 30-ft. mall, Rte. 17 just west of Horseheads, total of 3.22 mi. work will be performed, 2.04 mi. in the village of Horseheads, $1,307,000.

Erie Co.—replacement of an existing rein.-con. slab culvert on Rte. 39 between Collins and Mortons Corners, $50,000.

▲ **NEW YORK**—B.A. 3/5—B. D. Tallamy, supt. State Dpt. P. Wks., State Office Bldg., Albany,

Albany Co.—grading, paving, construct drainage facilities 2.2 mi. sect. of Thruway form north bank of Normanskill northward to Delaware Ave. and

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constr. 1.65 mi. access roads, construct traffic interchange facilities (Southeren Blvd. Interchange) and two grade separation structures, $1,923,000. CD 3/28/50.

Albany and Schenectady Counties—grading, paving, construct drainage facilities along 6.54 mi. sect. of Thruway between Gordon Rd. and Albany-Schenectady Co. line, construct 3.43 mi. access roads, incl. building 7 grade separation structures at various points along the route and construct closed box bridge over Poentic Kill, $5,227,000.

Broome Co.—construct twin 25-ft. concrete arteries, with a minimum 44-ft. center mall, on 2.67 mi. Rte. 17 from 2 mi. east of Binghamton city line and continuing toward Windsor, incl. widn. existing bridge over Stanley Creek, $1,648,000.

Delaware Co.—construct with 20-ft. wide bit. macad. 3.58 mi. Rte. 236, from New York, Ontario & Western R.R. tracks at Apex southerly to Tompkins-Hancock Town line, minor changes will be made in present alignment to straighten route and reduce existing grades, incl. construction of 24 ft. rein.-con. slab bridge 26 ft. wide over Cadosia Creek and necessary drainage facilities, $550,000.

Monroe Co.—b. conc. 4.18 mi. previously-graded Mt. Read Blvd. arterial route in Rochester from Maple St. to Ridge Rd., incl. 4 bridges, one to carry Mt. Read Blvd. over New York Central R.R. tracks and 3 to carry Ridgeway Ave., Ridge Rd. and Baltimore & Ohio R.R. over Mt. Read Blvd, $2,035,000.

Montgomery Co.—grading, paving, construct drainage facilities 10.4 mi. sect. of Thruway between Ft. Plain and Randall and construct 3.33 mi. of access roads, incl. building bridges to carry the Thruway over River St. (Rte. 163) in Ft. Plain and Church St. (Rte. 10) in Canajoharie, traffice interchange facilities in Canajoharie and 6 other bridges to carry the thruway over various creeks crossing the route, $9,481,000.

Onondaga Co.—construct **Mattydale** Interchange which will provide access to and exit from the Thruway where the thruway crosses over proposed route of Syracuse Mattydale State Hy. east of Buckley Rd., incl. 2.7 mi. of work will be construction 3 grade separation structures and all necessary drainage facilities, $1,394,000, CD 9/22/47.

Orange Co.—new highway constr. totalling 6.23 mi. of twin 25-ft. concrete arteries between Chester and Goshen, mostly on new location, incl. construction of 3 grade separation structures and 1 box bridge, $3,374,000.

Oswego Co.—c. conc. and b. conc. 1.37 mi. Oneida Street Arterial Rte. in Oswego, from intersection of State Rd. and Oneida St. and extending easterly to meet Rte. 104 approx. three-tenths of a mi. east of the city line, constructing new 32-ft. wide rigid frame bridge with safety walks over single track New York, Ontario & Western R.R. and all necessary drainage facilities, $496,000.

Suffolk Co.—construct twin 25-ft. concrete arteries, separated by variable width mall, on Maywood-Babylon Rd. from Sunrise Hy. southeast into Babylon, joining there with Montauk Hy., incl. con. c. paving 1.3 mi., b. conc. 1.05 mi. of adjoining roads and 0.18 mi. misc. work making total of 2.53 mi. of work to be performed, incl. construction of all necessary drainage structures and facilities, $1,059,000

Warren and Washington Counties—20 ft. bit. macad. 4.65 mi. in two sections on county road extending from Fort Ann westerly to Rte. 9L, incl. necessary grading, drainage and 2 bridge structures, $500,000.

New York—LIGHTING FACILITIES—B.A. 3/5—B. D. Tallamy, supt. State Dpt. P. Wks., State Office Bldg., Albany, installation of viaduct lighting facilities in Rockville Center, in connection with Long Island R.R. grade crossing elimination projects underway at Centre Village and Park Aves., Nassau Co. $10,000.

† **N. J., Wrightstown**—SWITCHING STATION, etc—B.A. On Or About 3/19—U. S. Eng., 121 N. Broad St., Phila., 1, Pa., switching station, sub-stations, electrical distr. and street lighting systems, McQuire Air Force Base, ENG. 3-6-109-53-457. CD 9/13/51.

BIDS ASKED—BUILDINGS

† **Md., Indian Head**—CHANGE HOUSE—B.A. 2/25—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., change house, Patterson Pilot Plant, Naval Powder Factory, Contract NOY 75392. Plans deposit $10.

† **N. Y., West Point**—LIBRARY—B.A. On Or About 3/5—U. S. Eng., 80 Lafayette St., New York, Zone 13, Cadet Reference Library addn., United States Military Academy, Serial No. ENG 30-075-53-181, Est, $280,000. Plans deposit $15. CD 10/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Rust Eng. Co.**, 575 Sixth Ave., Pittsburgh, Pa., CA. **$3,365,000.** facilities at Knolls Atomic Power LABORATORY, Proj. CIR, Inv. AE-52-Sch 69, WEST MILTON, N. Y. U. S. Atomic Energy Comn., Schenectady Operations Office, Knolls Atomic Power Laboratory, Bldg. Al, Niskayuna, N. Y. Bids Jan. 6, awarded Feb. 7. CD 1/19 under LB.

▲ **Uplands, Inc.**, (Sponsor), 4625 Edmondson Ave., Baltimore, Md., CA. **$4,800,000**, construct, manage, finance, 625 units, Proj. 052-80010, Navy No. 1, 624 units, Proj. 052-80011, Navy No. 2, HOUSING, frame, brick, concrete block, concrete constr., BAINBRIDGE, MD. Fifth Naval Dist., P. Wks. Officer, Norfolk, Va. Bids Oct. 30. CD 12/16, under LB.

Morrow Bros., 2315 N. Charles St., Baltimore 18, Md. CA **$180,000.** 1 story, 220x73x30 ft., steel bar WAREHOUSE and OFFICE alterations, 1036 Patapsco Ave., BALTIMORE, MD. Bethlehem Steel Co., Sparrows Point, Md.

(Continued on page 253)

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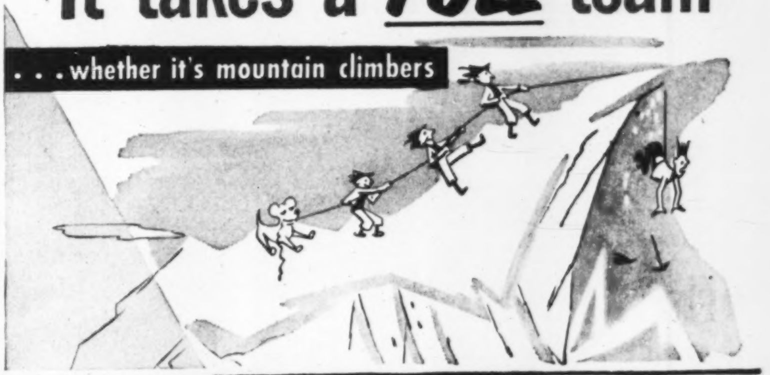

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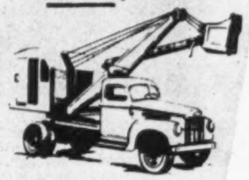

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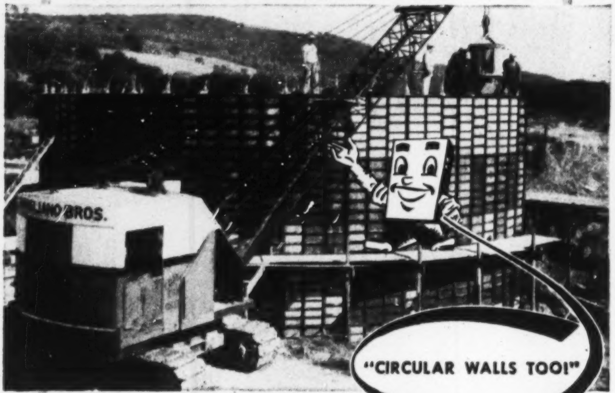

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(Continued from page 251)

Henry A. Knott, Inc., 2046 Greenmount Ave., Baltimore, Md. LB **$309,900.** Montebelle HOSPITAL, incl. admin. bldg., nurses home, laundry bldg., garage, alterations, imprvs., BALTIMORE, MD. State, Dpt. P. Imprvts., 506 Park Ave., Baltimore 1, Md. Bids Feb. 5. CD 1/28.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

Miss., Jackson—B.A. 2/28—City, City Hall, Sanitary Sewer Proj. 136.5. CD 8/11/50.

Ga., Dawsonville—B.A. 3/3—City, City Hall, WW Imprvs. $50,000. Plans deposit $25. Vinson & Co., 30 14 St. N.E., Atlanta, engrs.

Miss., Vicksburg—B.A. 3/3—Bd. Supervs. Warren Co., imprv. 3.776 mi. Red Bone Rd. $90,000. CD 12/19.

† **Va., Portsmouth**—PILING—B.A. 3/3—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, piling for electrical and electronics bldg. at Norfolk Naval Shipyard, NOY 74873, Spec. 35787. Plans deposit $10.

† **W. Va., South Charleston**—B.A. 3/3—Dist. P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, 11, Va., street paving in bungalow park at U. S. Naval Ordnance Plant, Spec. 36488. Plans deposit $10.

† **Florida**—B.A. About 3/10—U. S. Eng., P.O. Box 4970, Jacksonville, maintenance dredging in (1) Port Everglades Harbor Basin and (2) The Intracoastal Waterway between Vero Beach and Miami, CIVENG 08-123-53-40. CD 11/24/43.

† **Va., Oceana**—ADMINISTRATION BLDG.—B.A. 3/10—P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, admin. bldg., parachute bldg., crash facilities, magazines and line operations bldg., U. S. Naval Air Station, NOY 75691, Spec. 35847. Plans deposit $20. CD 12/31.

BIDS ASKED—BUILDINGS

La., Crowley—HOUSING—B.A. 2/27—Crowley Housing Auth., Crowley, 40 housing units. CD 10/5/50.

† **Fla., Panama City**—ANIMAL FACILITIES BLDG.—B.A. 3/3—Dpt. Navy, Officer of Charge of Construction, Box 365, Naval Base, S. C., animal facilities bldg. for medical laboratory, NOY 76247. Plans deposit $10.

† **Va., Yorktown**—COMMUNICATION OFFICE—B.A. 3/3 P. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, communication office addn. to Admin. Bldg. No. 31 at U. S. Naval Mine Depot, NOY 77067, Spec. 36535. Plans deposit $10.

† **Ky., Fort Knox**—ARMORED SCHOOL—B.A. 3/12—U. S. Eng., 830 W. Broadway, Louisville, Zone 3, 2 story, bsmnt., 44x212 ft. front wing, 124x302 ft. rear wing, 82x114 ft. projection armored school, ENG 15-029-53-29. Plans deposit $15. CD 11/18/52.

SOON LETS CONTRACT—BUILDINGS

Ga., Atlanta—WAREHOUSE—Sears Roebuck & Co., 675 Ponce de Leon Ave. N.E., soon lets contract warehouse addn., Jefferson St. $150,000. CD 10/17/51.

Ky., Georgetown—STUDENT UNION—Georgetown College, Georgetown, soon lets contract Cooke, Student Union Bldg. $300,000. Frankel & Curtis, Central Bank Bldg., Lexington, engrs.-archts. CD 3/28/50.

▲ **Ky., Henderson**—MILL—Co-operative Mills, c/o A. E. Baxter Eng. Co., engr., Electric Bldg., Buffalo, N. Y., soon lets contract elevator feed mill, $1,000,000.

Ky., Louisville—CHURCH—Beechmont Baptist Church, Third and Wellington Sts., soon lets contract 2 story T-shaped, 124x149 ft. brick over concrete block church. Approx. $400,000. Walter Wagner & Jos. Potts, Fincastle Bldg., archts. E. R. Ronald & Assoc., 554 S. 3 St., engrs. CD 10/13.

Ky., Louisville—CHURCH—Holy Spirit Catholic Church, 3345 Lexington Rd., soon lets contract 2 story, 71x177 ft. brick, stone trim church, Cannons Lane. $500,000. Walter Wagner & Joseph H. Potts, Fincastle Bldg., archts. E. R. Ronald Assoc., 554 S. 3 St., engrs.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Belcher Oil Co.**, 1217 Biscayne Blvd., Miami, Fla., CA, **$1,148,847,** Pumping Station 5A, Central and Southern Florida Flood Control Project, west of West Palm Beach, Inv. 53-24, FLORIDA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Jan. 20. CD 12/17.

R. E. Pitts, Clarksville, Ark. CA **$68,112.** Natural gas sys., ASHLAND, MISS. City, Ashland, Miss. Bids Feb. 3. CD 1/16.

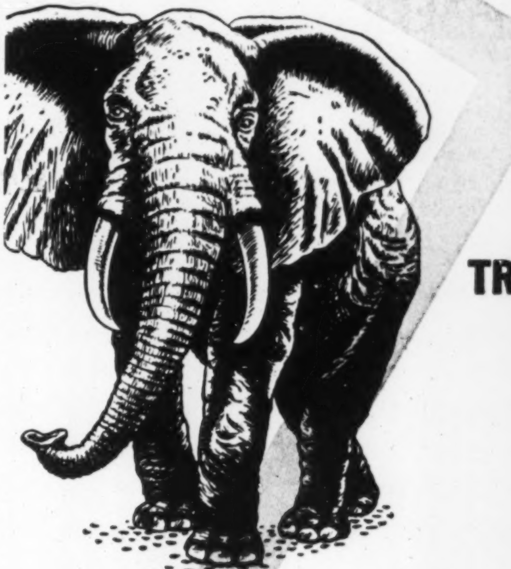
W. E. Blaine & Son, Mount Olive, Miss. CA **$66,810.** Double bit. surf. tr. 3.998 mi. F.A. Secondary Proj. No. S 502-2 (1), BELZONI, MISS. Bd. Supervs. Humphreys Co., Court House, Belzoni, Miss. Bids Feb. 4. CD 1/6.

Flenniken Constr. Co., Lake Charles, La. CA **$128,094.** Concrete Street and Sidewalk Proj. 1953-29 and 1953-30, LAKE CHARLES, LA. City, City Hall, Lake Charles, La. Bids Feb. 4. CD 1/23.

McMichael Constr. Co., P. O. Box 508, Shreveport, La. CA **$93,594.** Swimming pool and bath house, LEESVILLE, LA. Town, Leesville, La. Bids Feb. 2. CD 1/16.

Service Foundry, Inc., 416 Erato St., New Orleans, La. LB **$67,000.** Contr. 237-S, furnishing 30 in. trash pumps for Sewage Pumping Station A, NEW ORLEANS, LA. Sewerage and Water Bd., 526 Carondelet St., New Orleans, La. Bids Feb 3. CD 5/3/51.

PROTECTION



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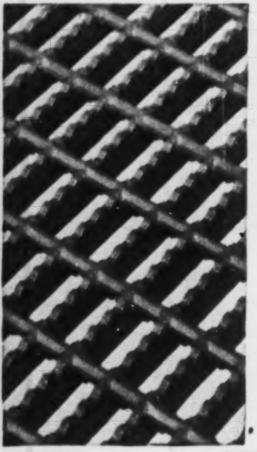

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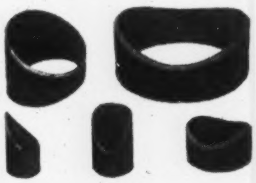

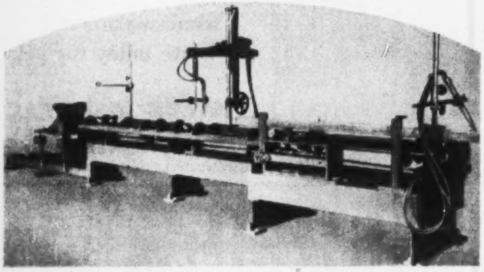

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† **U. S. Eng.**, 300 Broadway, Little Rock, Ark. cancelled bids to have been opened Feb. 25, armament electronics repair shop, Barksdale Air Force Base, Inv. 53-45, SHREVEPORT, LA. CD 1/26.

Sullivan & Cozart, Inc., 822 W. Kentucky St., Louisville, Ky., CA. **$152,000.** Grand stand and club house enclosure (rein.-con.) addn., Churchill Downs Race Track, LOUISVILLE, KY. Churchill Downs, Inc., 700 Central Ave., Louisville, Ky. D. X. Murphy & Bros., Louisville Trust Bldg., Louisville, Ky. engrs.-archts. Awarded Jan. 30.

Griffitts-Bell Paving Co., 5119 Kingston Pike, N. W. Knoxville, Tenn. and **Roehl Constr. Co.**, 625 Atchley St., Knoxville, Tenn., LB **$61,907,** pave 5 streets, KNOXVILLE, TENN. City, City Hall, Knoxville, Tenn. Bids Feb. 3. CD 1/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **M. T. Broyhill & Sons**, 4624 Lee Hy., Arlington, Va., Owner Builds. **$1,500,000,** 13 bldgs., 266 unit Fort Bennett APARTMENTS, 1500-1600 blk. N. 22 St., ARLINGTON, VA. Corning & Moore 1726 M. St. N. W. Wash. D. C. archts. CD 9/2

▲ **Daniel Constr. Co.**, P.O. Box 2087, Greenville, S. C. CA. **$2,227,000,** WARD BLDGS. at South Carolina State Hospital, COLUMBIA, S. C. S. C. State Mental Health Comn., State Capitol, Columbia, S. C. Bids Jan. 29. CD 2/10, under LB.

▲ **McManus Framing Co.**, 40 Federal Hy., Boca Raton, Fla., CA **$8,000,000,** 1,000 RESIDENCES, BOCA RATON, FLA. Florida Boca Raton Housing Assn., 40 Federal Hy., Boca Raton, Fla.

Frank Muscarella, Clearwater, Fla., Owner Builds, **$420,000,** 42 RESIDENCES, CLEARWATER, FLA.

Virden Lumber & Steel Co., Greenville, Miss., Owner Builds, **$700,000,** 100 RESIDENCES, GREENVILLE, MISS.

D. O. Furr Constr. Co., 718 Edwards St., Shreveport, La. CA Est. **$95,000.** WAREHOUSE, 4821 Laurel St., BATON ROUGE, LA. Herrin Transfer & Warehouse Co., Inc., 5041 Adams Ave., Baton Rouge, La.

Tudor Constr. Co., Alexandria, La. CA **$313,900.** girl's DORMITORY, GRAMBLING, LA. State Bldg. Auth., Capitol Bldg., Baton Rouge, La. Bids Feb. 2. CD 1/13.

W. W. Daste, 2037 N. Galvez St., New Orleans, La. Owner Builds. **$85,000.** WAREHOUSE-STORE, NEW ORLEANS, LA.

Perrilliat-Rickey Constr. Co., 1530 S. Rendon St., New Orleans, La. LB **$304.000.** faculty RESIDENCE and CHAPEL at St. Augustine High School, NEW ORLEANS, LA. Josephite Fathers, 2600 London Ave., New Orleans, La. Bids Feb. 4.

Ale Bornstein, 1219 Logan St., Louisville, Ky., CA **$353,260.** new kitchen, dental dept., alterations and addns. to X-ray and polio wards, for HOSPITAL LOUISVILLE, KY. Kosair Crippled Childrens Hospital, 982 Eastern Parkway, Louisville, Ky. Joseph & Joseph, Speed Bldg., Louisville, Ky., archts. E. R. Ronald & Assoc., 554 S. 3 St., Louisville, Ky., engrs. Bids Jan. 29, awarded Feb. 4.

▲ **Winfrey Bros., Inc.**, 123 Burwell Ave., N. W., Knoxville, Tenn., CA. Approx. **$1,000,000.** remodel and addn. to present bldg. occupied by Sevoy Theatre and addn. to Cardinal Room of Kentucky HOTEL, LOUISVILLE, KY. J. Graham Brown, Brown Hotel, Louisville, Ky. Awarded Jan. 28. CD 1/29.

Verhey Constr. Co., 207 N. Holly St., Chattanooga, Tenn. CA. **$88,000.** auto parking GARAGE, CHATTANOOGA, TENN. Parkrite Co., 7th and Georgia Ave., Chattanooga, Tenn.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

Mich., Detroit—B.A. 2/24—Bd. Rd. Comrs. Wayne Co., C. L. Wilson, chn., 3800 Cadillac Tower, c. conc., drainage, grading parts of Appleton, Colgate, Dacosta, Drexel, Eton, Hazelton, McDonald, Merrick, Riverdale, Woodbine and Hazelwood Sts. Plans deposit $10, refundable. Leroy Smith, c/o owner, co. engr. CD 2/5.

† **Mich., Selfridge**—Air Force Base—IGLOOS AND ACCESS ROAD—B.A. 2/26—U. S. Eng., 1900 Cadillac Tower, Detroit, ammunition storage igloos and access road, Eng. 20-064-53-32. CD 7/31/51.

† **Wis., Osceola**—B.A. 3/10—U. S. Eng., 428 Federal Bldg., Milwaukee, Zone 1, rehabilitation of roads, drives and parking areas, in vicinity of here, Serial No. ENG 47-013-53-39. Extended date. CD 1/30.

BIDS ASKED—BUILDINGS

Wis., Milwaukee—WAREHOUSE—B.A. 2/27—City, City Hall, 1 story, 120x160 ft., steel brick warehouse. Plans deposit $10. Lloyd D. Knapp, city engr. Fred Wegner, city archt. CD 4/28/49.

SOON LETS CONTRACT—BUILDINGS

Mich., Center Line—OFFICE—Smith-Hinchman & Grylls, archts., 800 Marquette Bldg., Detroit, soon let contract 2 story, bsmnt., brick, concrete dial exchange offices, dial sys., for Michigan Bell Telephone Co., 1365 Cass Ave., Detroit, Mich. $400,000. CD 1/15.

Mich., Detroit—SCHOOL—A. Kohner, archt., 19111 Asbury Park, Detroit, soon lets contract 2 story, brick, steel school, Seven Mile Rd. and Lesure St., for Congregation Shaarey Zadek, 2900 W. Chicago St., Detroit, Mich. $300,000.

Mich., Detroit—PLANT—James Vernor Co., 239 Woodward St., soon lets contract brick, masonry bottling plant,

(Continued on page 256)

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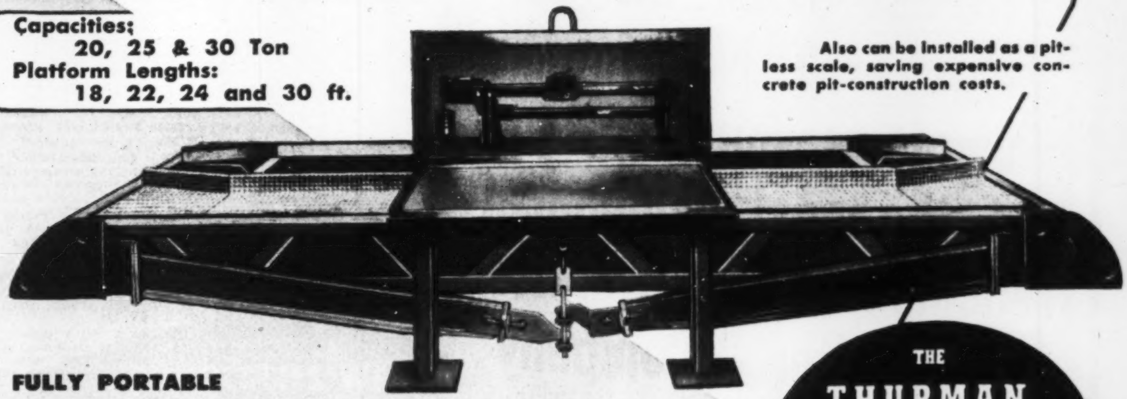
Capacities:
20, 25 & 30 Ton
Platform Lengths:
18, 22, 24 and 30 ft.

Also can be installed as a pitless scale, saving expensive concrete pit-construction costs.



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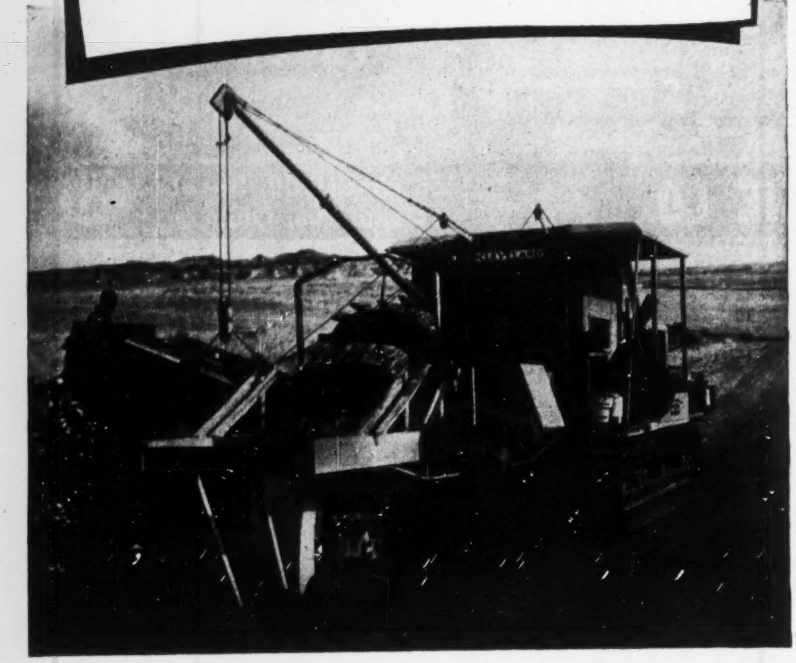

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(Continued from page 254)

addn., alterations, Woodward St. $82,000. **Harley, Ellington & Day, Inc.**, 153 E. Elizabeth St., archt. CD 2/9.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Christopher Constr. Co., 40 W. Gay St., Columbus, O. LB **$242,420**, est. $309,000, rebuilding, enlarging activated sludge sewage disposal plant, WESTERVILLE, O. City, Westerville, O. Bids Feb. 4. CD 1/21.

A. Olson Constr. Co., 1228 Commercial St., Waterloo, Ia., LB, **$197,476**, substructure;

Bethlehem Steel Co., 409 N. Michigan Ave., Chicago 11, Ill., LB, **$175,490**, steel fabrication for bridge over Rock River, HILLSDALE, ILL. Rock Island and Whiteside Counties, Court House, Rock Island, Ill. Bids Jan. 28. CD 12/31.

Semate Waters Constr. Co., Rock Island Block, Rock Island, Ill., LB, **$95,450**, No. 4, sewage treatment plant, MILAN, ILL. Village, Village Hall, Milan, Ill. Bids Jan. 26. CD 1/15.

Clark Bros. Co., 309 S. Jefferson Ave., Peoria, Ill., CA, **$177,857**, paving Main St., Sheridan Rd. to Hamilton Blvd., PEORIA, ILL. City, City Hall, Peoria, Ill. Awarded Jan. 19. CD 8/7.

G. E. T. Constr., Inc., 108 W. Wells St., Milwaukee 3, Wis. CA, **$78,334**, water mains in various streets, CUDAHY, WIS. City, City Hall, Cudahy, Wis. Bids Jan. 28, awarded Feb. 3. CD 1/6.

Concrete Contractors, Inc., 4414 W. Wisconsin Ave., Milwaukee 8, Wis., LB, **$135,620**, repairing, altering Wisconsin Ave. Viaduct, MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids Feb. 5. CD 1/13.

Thomas L. McNamar, Inc., 511 N. Waverly Rd., Lansing, Mich. CA **$142,476**. Campus Sewer 48, 6,173 ft. 12- to 48-in. concrete sewers, 3,459 ft. 8- to 10-in. tile sewer, ANN ARBOR, MICH. University of Michigan, Bd. Regents, Ann Arbor, Mich. Bids Jan. 22. CD 1/5.

The Boam Co., 14960 Piedmont St., Livonia, Mich. CA **$173,961**. 18,939 ft. 12 and 16 in. c.i. water mains, MARYSVILLE, MICH. City, Marysville, Mich. Bids Jan. 23. CD 1/15.

BUILDINGS

LOW BIDS AND CONTRACTS

C. W. Hayes Co., 135 S. La Salle St., Chicago 3, Ill., CA, **$300,000**, 2 top floors OFFICE addn., Sheridan Rd. and Diversey Blvd., CHICAGO, ILL. Meat Cutters Union Headquarter Bldg., c/o Everett F. Quinn & Assocs., archts., 134 N. La Salle St., Chicago, Ill. Awarded Feb. 4.

▲ **Lindgren & Sons**, 10644 Church St., Chicago, Ill., Owner Builds, **$1,000,000**, 70 HOMES, OAKLAWN, ILL. Nordlie Co., 11100 S. Michigan Ave., Chicago, Ill., archts. Awarded Feb. 3.

Schless Constr. Co., 709 Rogers St., Downers Grove, Ill., CA, **$500,000**, 1 story, bsmnt., 40,000 sq. ft. OFFICE RIVER FOREST ILL. Employers Mutual Insurance Co. of Wausau, River Forest, Ill. Shaw, Metz & Dolio, 208 S. La Salle St., Chicago 4, Ill., archts. Awarded Feb. 4.

Feidt & Dreyer Constr. Co., Gillett, Wis., LB **$117,951**, general contract 1 story T-shaped, 115x200 ft. WAREHOUSE and OFFICE, BARRON, WIS. Barron County Electric Co-operative, Barron, Wis. Bids Jan. 28. CD 1/6.

Practical Home Builders, Inc., 13440 W. Seven Mile Rd., Detroit, Mich. Owner Builds. **$350,000**. twenty-five 26x35 ft. brick single HOMES, Lyndon and Chatham Sts., REDFORD, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

KANSAS—B.A. 2/24—State Hy. Comn., Manhattan,

Doniphan Co.—culverts, wash checks beginning approx. ½ mi. north and ½ mi. west of Highland, west and north on county hy., Proj. 22 S 1051 (2).

Jefferson Co.—culvert Sta. 87 plus 30, 6x5x66 ft. rein.-con. bridge, bridge Sta. 58 plus 53, 36 ft., 45 ft., 36 ft. continuous rein.-con. slab spans approx. 1½ mi. north of Meriden and bridge over Rock Creek approx. 1 mi. north of Meriden, Proj. 44 S 514 (2).

Leavenworth Co.—Bridge 32-52-8.6 Sta. 527 plus 02 104 ft., 130 ft., 104 ft. continuous steel girder spans over Stranger Creek approx. 1/8 mi. east of Linwood on K-32, Proj. 32-52 S 167 (2). CD 10/1 under LB.

Pottawatomie Co.—approaches, grading 0.451 mi. to Rock Creek Bridge approx. 6¾ mi. north of St. George, Proj. 75 ER 106.

Wabaunsee Co.—bridge Sta. 11 plus 79 38 ft., 47 ft., 38 ft. continuous steel beam spans, over Hendricks Creek between Sec. 4 and 5, T 12 S R 10 E, approx. 2 mi. northwest of Alma, Proj. 99 S 1082 (1).

bridge Sta. 16 plus 28, 35 ft., 45 ft., 35 ft. continuous steel beam spans over North Fork Dragoon Creek in N.W. ¼ sec. 24, T 14 S, R 12 E, east of Bradford, Proj. 99 S 1081 (1).

bridge Sta. 17 plus 81.5 38 ft., 47 ft., 38 ft. continuous steel beam spans over Turkey Creek between Sec. 32 and 33, T 10 S, R 12 E approx. 3½ mi. north and 3½ mi. west of Maple Hill, Proj. 99 S 175 (2).

† **Nebraska—B.A. 2/26**—U. S. Eng., Davidson Bldg., Kansas City, Mo., removal of railroad facilities, near Naponees, Harlan County Dam and Reservoir Proj. Harlan Co., Inv. 23-028-53-137. CD 5/25/44.

Tex., Kemah—B.A. 3/3—Galveston County Water Control & Imprv. Dist. No. 12, Kemah, No. 1, drilling, developing water supply well, pumping unit, $36,000; Nos. 2 and 3, steel surface storage tank and steel elevated tank, $35,000; No. 4, water distr. sys. $40,000. Joe J. Rady & Co., City Hall, Galveston, engrs.

Tex., Kemah—B.A. 3/3—Galveston County Water Control & Imprv. Dist. No. 12, Kemah, No. 5, sewage collection sys. $65,000; No. 6, sewage treatment plant, $60,000. Joe J. Rady, City Hall, Galveston, engrs.

† **Nebraska**—B.A. 3/10—Bureau Reclamation, Dpt. Interior, Arapahoe, construct. Bartley Diversion Dam, Red Willow Unit, Frenchman-Cambridge Div., Missouri River Basin Proj., approx. 2 mi. southeast of Indianola, Red Willow Co., Spec. DC-3890. CD 5/25/44.

† **Tex., Laredo**—FUEL STORAGE—B.A. 3/12—U. S. Eng., P. O. Box 1229, Galveston, construct. AVGAS and jet fuel storage, above ground, Laredo Air Force Base, Inv. No. ENG 41-243-53-108. CD 11/28.

† **Tex., Randolph Air Force Base**—HANGARS—B.A. 3/12—U. S. Eng., P. O. Box 1229, Galveston, modifications to Hangars 6 and 7, Inv. No. ENG-41-243-53-113. CD 5/2/51.

† **Nebraska**—B.A. 3/17—Bureau Reclamation, Dpt. Interior, Superior, earthwork and structures, Franklin Canal, Station 750 plus 00 to Station 1454 plus 00 and drains, Bostwick Div., Missouri River Basin Proj., in vicinity of Franklin and Riverton, Franklin Co., Spec. DC-3891. CD 5/25/44.

† **Montana**—B.A. About 3/18—U. S. Eng., Admin. Bldg., Fort Peck, Milk River Local Flood Protection, Bull Hook Unit, Havre, Twp 32N, Range 16 E, Hill Co., CIVENG-24-016-53-8. CD 4/21/44.

† **Neb., Fort Crook**—SAC CONTROL CENTER—B.A. 4/7—U. S. Eng., 1709 Jackson St., Omaha, SAC control center, Offutt Air Force Base, Inv. 25-066-53-66. CD 1/28.

BIDS ASKED—BUILDINGS

† **Minn., Minneapolis**—WAREHOUSE—B.A. On Or About 3/10—U. S. Eng., 1709 Jackson St., Omaha, Neb., 1 story, 400x672 ft. masonry warehouse, 14,400 sq. yd. pavement, 1,050 sq. yd. double bit. surf. tr., on 6 in. base course 1,210 lin. ft. railroad spur, 6,030 lin. ft. 3- to 12-in. water mains and lines, 65 lin. ft. 8 in. sanitary sewer, manhole, 750 lin. ft. 15- to 24-in. storm sewers, 1,925 lin. ft. overhead steam lines, two 225 KVA, one 300 KVA unit sub-station, misc. electrical work, Twin Cities Arsenal, Eng. 25-066-53-132. CD 8/20.

Tex., Garland—SCHOOLS—B.A. 3/10—Garland Independent School Dist., Garland, Senior High and Daugherty Elementary Schools addns. $300,000. Plans deposit $25. Wyatt C. Hedrick, 904 Fort Worth Ave., Dallas, engr.-archt. CD 12/6/50, under LB.

▲ **Tex., Baytown**—CHEMICAL PLANT—Bids Asked—Gulf Alkali Corp., 509 Madison Ave., New York, N. Y., chemical plant, near here $6,000,000-$8,000,000. CD 2/6.

Tex., Houston—PLANT—Bids Asked—Globe-Union, Inc., c/o C. O. Wanvig, chn., 900 E. Keefe Ave., Milwaukee, Wis., storage battery mfg. plant. $250,000. CD 1/29.

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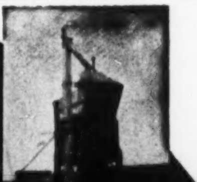
says S. D. Zenor, New Albany (Ind.), concrete sub-contractor



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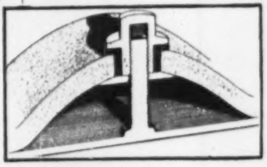

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SOON LETS CONTRACT—BUILDINGS

Minn., Litchfield—SCHOOL—St. Phillop's Church, **Rev.** C. Foley, Litchfield, soon lets contract 2 story, part bsmnt., 59x123 ft. school, $300,000, Traynor & Hermanson, St. Cloud, archts.

Okla., Tulsa—OFFICE—Oklahoma Blue Cross, c/o Koberling & Brandborg, archts., Court Arcade, soon lets contract 3 story office. $350,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

Kimmes Constr. Co., Hastings, Minn. CA **$402,708.** grav. base, plant-mixed bit. surf. 23.2 mi. between Hutchinson and East McLeod Co. line and between Prairie and Winsted, McLeod Co. Bids Jan. 23. CD 1/7.

▲† **Western Contg. Corp.**, 400 Benson Bldg., Sioux City, Ia., LB, **$5,412,500**, Madison to Marianna Levee and Floodway, St. Francis Basin Proj., St. Francis and Lee Counties, ARKANSAS. U. S. Eng., P. O. Box 97, Memphis, 1, Tenn. Bids Feb. 5. CD 1/5.

Layman & Sons, Riverside Dr., Tulsa, Okla., CA. **$67,824**, est. $68,145, wid'n and resurf. Denver Ave., TULSA, OKLA. City, City Hall, Tulsa, Okla. Awarded Jan. 30. CD 10/27.

† **Standard Dredging Corp.**, Cotton Exchange Bldg., Galveston, Tex., LB **$128,832**, est. $85,000, dredging Port Arkansas Bay channel, waterway in Nueces Co. Inv. No. CIVENG 41-243-53-51, TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Feb. 7. CD 1/26.

Town, Big Lake, Tex., Own Forces. **$35,000**, WW sys. rehabilitation;

Purchases, Day Labor. $38,500, WW distr. lines extens., BIG LAKE, TEX. CD 10/31.

Dodds & Wedegartner Constr. Co., Inc., 2345 East Ave., Brownsville, Tex., CA. **$122,040**, sanitary sewerage sys. imprvs., Units 2-A and 2-B, BROWNSVILLE, TEX. City Brownsville, Tex. Sigler, Clark & Winston, Weslaco, consult. engrs. F. L. Rockwell, city engrs. Bids Dec. 11 rejected. Bids Jan. 28. CD 1/21.

Roger Smith, Box 182, Waco, Tex., LB **$54,301**, water lines, COPPERAS, COVE, TEX. City, Copperas Cove, Tex. Bids Jan. 29. CD 1/13.

Roger Smith, Box 182, Waco, Tex., LB **$77,117**, sanitary sewer lines, COPPERAS COVE, TEX. City, Copperas Cove, Tex. Bids Jan. 29. CD 1/13.

City, City Hall, Fort Worth, Tex., Own Forces. **$60,000**, sanitary sewers, Burton Hill Rd. and Roaring Springs, FORT WORTH, TEX. C. M. Thelin, city engr. CD 1/14.

Frank J. Gaskey Constr. Co., 1430 N. Rice St., Houston, Tex. Owner Builds. **$41,500**, water lines, facilities, in Spring Branch area, HOUSTON, TEX.

Frank J. Gaskey Constr. Co., 1430 N. Rice St., Houston, Tex. Owner Builds. **$66,000**, street constr., asph. paving, concrete curbs and gutters, in Spring Branch area, HOUSTON, TEX.

Frank J. Gaskey Constr. Co., 1430 N. Rice St., Houston, Tex. Owner Builds. **$60,000**, storm sewers; **$65,000**, sanitary sewers, in Spring Branch area, HOUSTON, TEX. CD 1/23.

Brown & Root, Box 3, Houston, Tex., CA **$333,125**, est. $116,000, vehicular hard-paved auto parking area, north of new Airport Terminal, Municipal Airport, HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. Bids Jan. 6. CD 12/17.

Harrison Eng. & Constr. Co., Box 9662, Houston, Tex., CA. **$436,219**, est. $472,000, apron for aircraft parking;

Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex. CA. **$538,220**, est. $218,000, utility tunnels in area of municipal airport, at municipal airport, HOUSTON, TEX. City, City Hall, 900 Brazos St., Houston, Tex. Bids Jan. 13. CD 12/17.

Reising Constr. Co., Edinburg, Tex., LB **$384,388**, gunite lining, **$348,148**, brick lining, est. $700,000. Proj. **H-102-A**, main irrigational canal, 339,200 cu. yd.

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earthwork, 906,000 sq. ft. 2 in. pneumatically-applied concrete or brick canal lining and bridges, MISSION, TEX. Hidalgo Co. Water Control & Imprvt. Dist. 7, Mission, Tex. Bids Feb. 6. CD 1/21.

Reising Constr. Co., Edinburg, Tex., LB **$610,447**, gunite lining, **$610,447**, brick lining, est. $875,000. Proj. H-101-A, imprv. irrigation sys., incl. 549,200 sq. ft. 1½ in. pneumatically applied concrete or brick canal lining, 10,000 ft. 48 in. pipe laid, etc., MISSION, TEX. Hidalgo County Water Control & Imprvt. Dist. 14, Mission, Tex. Bids Feb. 6. CD 1/21.

▲ † **L. H. Lacy Co.**, 5630 Yale Blvd., Dallas, Tex. and **Dean Skinner**, Dallas Hy., Austin, Tex., LB **$139,900**, taxiways; LB **$509,100**, aprons; LB **$644,009**, West N-S Runway, Perrin Air Force Base, Inv. No. Eng 34-066-53-76, SHERMAN, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids Feb. 5. CD 1/6.

† **Bergstrom & Yates**, Marshall, Tex., LB **$154,699**, est. $300,000. Unit 1, Group 2, construct group of related bldgs., Foster Air Force Base, Inv. No. Eng 41-243-53-91, VICTORIA, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Feb. 6. CD 12/31.

† **C. L. Browning, Jr.**, Box 5008, Beacon Hill Station, San Antonio, Tex., LB **$199,418**. Group I, construct group of related bldgs., Foster Air Force Base, Inv. No. Eng 41-243-53-89, VICTORIA, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Feb. 4. CD 12/31.

† **U. S. Eng.**, P.O. Box 1538, Albuquerque, N. M. cancelled bids to have been opened Feb. 3, dental clinic, Inv. No. Eng 29-005-53-78, Kirtland Air Force Base, ALBUQUERQUE, N. M. CD 1/2.

BUILDINGS

LOW BIDS AND CONTRACTS

Austin Co., 510 N. Dearborn St., Chicago 10, Ill., CA, **$300,000**, FACTORY, CEDAR RAPIDS, IA. Link Belt Speeder Corp., 2101 6 St., Cedar Rapids, Ia. Awarded Feb. 2. CD 1/21.

O. L. Olsen Co., c/o Neils Esperson Bldg., Houston, Tex. CA. **$875,000**, natural gas-processing PLANT, AGUA DULCE, TEX. Tennessee Production Co., Commerce Bldg. Annex, Houston, Tex. CD 2/9.

Standard Sulphur Co., c/o Gilbert B. Ebarb, Rosenberg, Tex., Purchases, Day Labor. **$425,000**, sulphur PLANT, DAMON MOUND, TEX. CD 2/5.

Robert E. Nesmith, Inc., 6738 Long Dr., Houston, Tex. CA. **$115,000**, WAREHOUSE, HOUSTON, TEX. Buda Engine & Equipment Co., 6414 Harrisburg St., Houston, Tex. CD 2/5, under CA.

Edgewood Corp., c/o S. Hogan, Sr., 3965 Delmonte St., Houston, Tex., Owner Builds. **$300,000.** 25 DWELLINGS, HOUSTON, TEX. CD 12/8.

W. S. Bellows Constr. Co., 716 N. Everton St., Houston, Tex., CA. **$309,000.** SCHOOL, HOUSTON, TEX. St. Johns School, Westheimer and Claremont Lane, Houston, Tex. CD 2/6.

Cooper & Matthews Lumber Co., 903 Blodgett St., Houston, Tex., Owner Builds. **$337,618**, 48 DWELLINGS, in new extens. Sect. 3, Andover Pl., HOUSTON, TEX. CD 12/10.

Wilson & Stokes Constr. Co., Pasadena, Tex., CA. **$347,115**, 45 DWELLINGS, in new extens. of Sect. 2, Andover Pl., HOUSTON, TEX. Cooper & Matthews Lumber Co., 903 Blodgett St., Houston, Tex. CD 12/1.

Edgewood Corp., c/o S. Hogan, Sr., 3965 DelMonte St., Houston, Tex., Day Labor. **$325,000**, 32 DWELLINGS, portion Sect. 7, off Lynnhurst Dr., etc.; **$350,000**, 35 dwellings Sect. 8, Edgewood Addn. off Sharondale Dr., etc. HOUSTON, TEX. CD 12/8.

Boyer & Sowda, 3405 N. MacGregor St., Houston, Tex. Owner Builds. Approx. **$387,500**, Unit 3, 15 DWELLINGS, HOUSTON, TEX. CD 12/17.

Belfort Corp., c/o Earl Gregg, c/o E. B. & Rob. M. Atkinson, engrs., 1st. Natl. Bank Bldg., Houston, Tex. Own Forces. **$445,000.** 25 DWELLINGS, HOUSTON, TEX. CD 12/27.

W. E. Reid Development Co., 2601 Yale St., Houston, Tex. Owner Builds. **$300,000.** 21 DWELLINGS, near Spring Branch, HOUSTON, TEX. CD 1/7.

Shelby Constr. Co., 2326 N. Beckley St., Dallas, Tex. CA. **$301,994**, elementary SCHOOL, PECOS, TEX. Pecos Independent School Dist., Pecos, Tex. Bids Feb. 3. CD 5/2.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Arizona-Nevada**—B.A. 2/26—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., metal enclosed switchgear assembly, Transmission System, Davis Dam Proj., Spec. DS 3868. Extended date. CD 1/12.

† **Wash., Richland**—RAILWAY TRACK, etc.—B.A. 2/26—Atomic Energy Comn., Richland, 6,038 ft. new railway track and relay 3,150 ft. new rail on existing ties, Hanford Works. CD 6/30, under Public Buildings.

† **Calif., Travis Air Force Base**—B.A. 2/27—U. S. Eng., Wright Bldg., Sacramento, 168x176 ft., concrete, masonry block armament and electronics shop, incl. paved driveways, sidewalks and parking area, ENG 53-59, Spec. 1757.

† **Nev., Las Vegas**—UTILITIES—B.A. 2/27—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., utilities exten., Job No. Nellis AFB-52-ACRP-AF, Directive 7, Nellis Air Force Base, No. 04-353-53-92. CD 12/10.

† **Washington**—TRANSMISSION LINES—B.A. 3/3—Bonneville Power Admin., 827 N.E. Oregon St., Portland, Ore., clearing 43.4 mi. right-of-way, constr. access roads, Carson-Ross Section, McNary-Ross 345.

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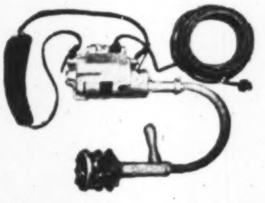

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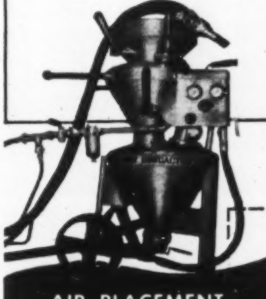

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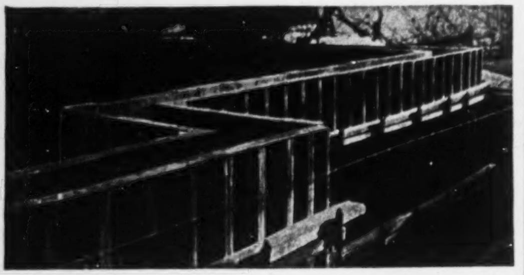

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kv line, Skamania and Clark Counties, Inv. 6792. Plans deposit $1. Extended date. L. C. Stewart, 827 N.E. Oregon St., Portland, Ore., engr. CD 2/4.

† **Wash., Richland**—B.A. 3/3—Atomic Energy Comn., Richland, 3,800 ft. 12 in. sanitary water supply line, 3,930 ft. 24 in. raw water supply line and 4,300 ft. insulated steam supply line, Hanford Works. CD 6/30, under Public Buildings.

† **Calif., Port Chicago**—B.A. 3/4—Dist. P. Wks. Office, Twelfth Naval Dist., Constr. Div. Room B-114, San Bruno, paving lumber handling areas and additional paving at U. S. Naval Magazine, NOY 75186. Spec. 35380. Plans deposit $10.

† **Ariz., Tucson**—WAREHOUSE—B.A. 3/5—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., 200x400 ft., warehouse, Davis-Monthan Air Force Base. ENG-04-353-53-104. $500,000. CD 12/5.

† **Washington**—B.A. 3/10—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, Murphy Levee repairs, Cusick. CIVENG-45-108-53-55.

† **Calif., Pleasanton**—AUDITORIUM THEATRES, etc.—B.A. 3/17—U. S. Eng., 180 N. Montgomery St., San Francisco, two 11,500 sq. ft. auditorium theatres, Parks Air Force Base. ENG-04-203-53-153.

BIDS ASKED—BUILDINGS

Calif., Gardena—SHOP—B.A. 2/20—El Camino Junior College Dist., reinforced brick Shop Bldg. No. 3. $150,000. Marsh, Smith & Powell, 208 W. 8 St., Los Angeles, archts.

▲ **Wash., Seattle**—STORE—B.A. 3/5—Allied Department Stores, 401 5 Ave., New York, N. Y., 4 story, 231x350 ft., rein.-con. department store addn. atop present Bon Marche Structure. $3,500,000. Extended date. CD 2/4.

SOON LETS CONTRACT—HEAVY CONSTRUCTION

California — REPEATER STATIONS — Pacific Telephone & Telegraph Co., 140 N. Montgomery, San Francisco, Selma, soon lets contract, 1 story 21x21 ft., concrete block repeater station; Visalia-Junction, 1 story, 21x21 ft. concrete block repeater station; Orangehurst, 1 story, 11x13 ft., concrete block repeater station; Delano, 1 story, 21x21 ft., concrete block repeater station; Famoso, 21x21 ft., concrete block repeater staiton; Laton, 1 story, 13x21 ft., frame, stucco central dail bldg. CD 8/6/47.

SOON LETS CONTRACT—BUILDINGS

Calif., Oakland—OFFICE—Alameda-Contra Costa Medical Assoc., 354 21 St., soon lets contract 2 story, structural steel, brick office, new blood bank and headquarters bldg. George F. Bidwell, 1444 Webster St., archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Economy Pumps, Inc.**, 35 and Indiana Sts., Phila., Pa., CA, **$105,937**, 16 pumping units for Warden, North Warden, Warden relift, East Low 61, East Low 61.7 and East Low 63.1E pumping plants Area E-5 of East Low Canal laterals Columbia Basin Proj., Spec. DS 4837, WASHINGTON. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Dec. 16, awarded Jan. 30. CD 11/11.

† **Young & Smith Constr. Co.**, Beason Bldg., Salt Lake City, Utah, LB, **$316,852**, est. $329,199, Puget Sound outfall channel, Inv. 53-85, FORT LEWIS, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Feb. 5. CD 1/12.

† **S. Birch & Sons and McLaughlin & Lane**, Ford Bldg., Great Falls, Mont., LB, **$435,223**, est. $409,748. Hydrant refueling and bulk storage facilities, Larson Air Force Base, Inv. 53-31, MOSES LAKE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash. Bids Feb. 4. CD 1/28.

† **Howard P. Foley Co.**, 510 N. 1 St. N., Salt Lake City, Utah, LB, **$194,300**, est. $126,840 exterior electrical work in sixth housing addn., RICHLAND, WASH. Atomic Energy Comn., Richland, Wash. Bids Feb. 3. CD 6/30, under Public Buildings.

† **Harnischfeger Corp.**, 4400 W. National St., Milwaukee, Wis., CA **$72,540**, one 50-ton revolving crawler crane, Lookout Point Dam, Lane Co., CIVENG-35-026-53-99 OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Feb. 3.

Garnier Constr. Co., 1250 Maple Grove St., Puente, Calif., CA, **$86,199** Bushnell Ave. and Electric Ave. Pipeline Proj., ALHAMBRA, CALIF. City. 201 W. Main St., Alhambra, Calif. Awarded Feb. 3. CD 12/15/50.

Fred S. Macomber, 8818 Melrose Ave., Los Angeles, Calif., LB, **$134,922**, swimming pool and facilities, BAKERSFIELD, CALIF. Fruitvalle Elementary School Dist., 7115 Rosedale Hy., Bakersfield, Calif. Bids Jan. 29.

Howard H. Hays, 419 Bernard St., Bakersfield, Calif., CA, **$41,337**, irrigation pipe line, pumping unit and structure, BAKERSFIELD, CALIF. City 911 20 St., Bakersfield, Calif. Bids Feb. 2.

Haddock Engineers Ltd., 1616 S. Greenwood St., Montebello, Calif., CA, **$636,405**, streets, curbs, gutters, walks, water supply sys., in Ocean Gate Ave., Hawthorne, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Jan. 27, awarded Feb. 3. CD 2/10, under LB.

Herman L. Tuttle, 12448 Ralston Ave., San Fernando, Calif., CA, **$66,427**, imprv. Alex Ave. C.I. 1413, Huntington Park, LOS ANGELES, CALIF. Los Angeles Co., Hall of Records, Los Angeles, Calif. Bids Jan. 29, awarded Feb. 3. CD 9/19/45.

† **San Francisco Bridge Co.**, 140 Montgomery St., San Francisco 4, Calif., CA, **$173,148** maintenance dredging Mare Island Naval Shipyard, VALLEJO, CALIF. Dist. P. Wks. Office, Twelfth Naval Dist., San Bruno, Calif. Bids Jan. 7.

BUILDINGS

LOW BIDS AND CONTRACTS

Brazier Constr. Co., 309 Pontius St., Seattle, Wash., LB, **$308,000**, 146x210 ft., rein.-con. COLD STORAGE WAREHOUSE addn., BELLINGHAM, WASH. Port of Bellingham, Bellingham, Wash. Bids Feb. 6.

Quoidbach Constr. Co., Longview, Wash., CA, **$270,555** general contract PHYSICAL-EDUCATION and MUSIC BLDG. addn. to high school, CHEHALIS, WASH. School Bd., Chehalis, Wash. Bids Jan. 6. CD 1/15, under LB.

Roberson Constr. Co., Inc., 954 N. Fairoaks St., Pasadena, Calif., CA, **$348,850**, Sixth Ave. SCHOOL, ARCADIA, CALIF. Arcadia Unified School Dist., 111 W. Duarte Rd., Arcadia, Calif. Bids Jan. 23. CD 2/2, under LB.

J. H. Pomeroy Co., Inc., 727 W. 7 St., Los Angeles, Calif., CA, **$184,000**, RECEIVING INSPECTION LABORATORY, EL SEGUNDO, CALIF. Douglas Aircraft Co., Inc., 827 Lapham St., El Segundo, Calif. Bids Jan. 29, awarded Jan. 29. R. L. Skelton, plant engr. CD 5/29/51.

Baruch Corp., 321 S. San Vicente Blvd., Los Angeles, Calif., CA, **$99,000**, 2 story, 111x145 ft. FACTORY addn., LOS ANGELES, CALIF. Plas-Tex Corp., 2501 Military Ave., Los Angeles, Calif., Hillman & Nowell, 816 W. 5 St., Los Angeles, Calif. engr. Risley & Gould, 2502 W. 3 St. Los Angeles, Calif. engrs.

Dowd-Hoefer Co., Box 425 Fontana, Calif., LB, **$325,437**, Muscoy Junior High SCHOOL, SAN BERNARDINO, CALIF. San Bernardino High School Dist., 799 "F" St., San Bernardino, Calif. Bids Feb. 3. CD 1/21.

† **Allison Honer Co.**, 312 N. Main St., Santa Ana, Calif., CA, **$812,788.** SUBSISTENCE BLDG., NOY 74044, Spec. 35079, SAN DIEGO, CALIF. Eleventh Naval Dist., San Diego, Calif. Bids Jan. 22. CD 1/30, under LB.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

Ont., Toronto—B.A. 2/23—Public Utilities Comn., of Scarborough Twp., 1666 Kingston Rd., 8.3 mi. 6- to 12-in. water mains in West Hill area. $288,000. Proctor, Redfern & Laughlin, 11 Jordan St., engrs.

Sask., Regina—B.A. 2/23—Municipality, City Hall, filtration plant equipment and installation. Plans deposit $10. A. Shattuck, City Hall, city engr.

Sask., Moose Jaw—HOUSING—B.A. 2/25—Central Mortgage & Housing Corp., Kensington Bldg., Winnipeg, Man., 60 housing units in air force base housing project. $500,000. K. F. Hurst, c/o owner, regional engr.

B. C., Dalkatla—B.A. 3/4—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., dredging, $100,000. R. Blais, c/o owner, engr.

N. S., East Ferry—B.A. 3/4—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., breakwater reconstruction, $144,000. Plans deposit $25. R. Blais, c/o owner, engr. CD 4/26.

BIDS ASKED—BUILDINGS

B. C. Esquimalt—WORKSHOP—B.A. 3/10—Defence Constr. (1951) Ltd., 360 Homer St., Vancouver, 2 story, 160x280 ft., rein.-con. electrical workshop. $700,000. Plans deposit $100. J. L. Adams, 360 Homer St., Vancouver, B. C., engr. CD 8/8/51.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

W. C. Wells Constr., 140 Avenue F North, Saskatoon, Sask., CA, **$136,724**, WW and sewerage sys., PICTURE BUTTE, ALTA. Town, Picture Butte, Alta. Bids Jan. 30, awarded Feb. 5. CD 1/22.

Crews Twp. Chilliwack, Chilliwack, B. C., CA, **$250,000** paving 26 mi. roads in twp., CHILLIWACK, B. C. Township of Chilliwack, Chilliwack, B. C. Awarded Jan. 27.

Aiken & McLachlan Ltd., Hartzel Rd., St. Catherines, Ont., LB, **$219,900**, Oxford Steel Bridge, LONDON, ONT. City, R. H. Cooper, city clk., London, Ont. Bids Jan. 19. CD 12/10.

BUILDINGS

LOW BIDS AND CONTRACTS

G. H. Wheaton, 1217 Wharf St., Victoria, B. C., LB **$897,538**, rein.-con. Central Junior High SCHOOL, VICTORIA, B. C. School District No. 61, Victoria, B. C. Bids Feb. 4. CD 1/5.

Bradford-Hoshal Ltd., 1170 Yonge St., Toronto, Ont., CA, **$100,000** foundation for KILNS and BUILDINGS, CLARKSON, ONT. National Sewer Pipe Co. Ltd., 320 Bay St., Toronto, Ont. Awarded Feb. 5. CD 9/15.

David Weber, Kimberly, Ont., CA, **$300,000** 1 story HIGH SCHOOL, Bert Middoughs property, DUNDALK, ONT. Dundalk District High School, Dundalk, Ont. Barnett & Rieder, 644 Bayview Ave., Toronto, Ont., archts.

Hill-Clark-Francis Ltd., Whitewood Ave., New Liskegard, Ont. CA. **$350,000.** HIGH SCHOOL addn., NEW LISKEGARD, ONT. Bd. Educ., New Liskegard, Ont. Bids Jan. 2. CD 11/25.

Lloyd Brown, R.R. 2, St. Thomas, Ont. Owner Builds, **$400,000**, concrete, wood, brick DWELLINGS, Elgin Court (Hepburn Ave.), ST. THOMAS, ONT.

Finley W. MacLachlan Ltd., 195 Fairbank Ave., Toronto, Ont., CA, **$245,000**, 1 story, bsmnt., 45,000 sq. ft., rein.-con., steel, concrete, brick WAREHOUSE, Queen Elizabeth Way, TORONTO, ONT. Canadian General Electric Co., Ltd., 212 King St. Toronto, Ont. Awarded Feb. 4. CD 10/5/51.

Redfern Constr. Co. Ltd., 36 Toronto St., Toronto, Ont., CA, **$90,000**, WAREHOUSE, Dupont St. east of Shaw St., TORONTO, ONT. Rosco Metal & Roofing Products Ltd., 840 Dupont St., Toronto, Ont. A. G. Facey, 991 Bay St., Toronto, Ont., archt.

E. Orsini, 212 Eglinton Ave. E., Toronto, Ont., Owner Builds, **$300,000**, two 2 story, bsmnt., 40-suite steel frame, brick APARTMENT BLOCKS, Innes Ave., TORONTO, ONT. Charles Halliwell, 64 Avenue Rd., Toronto, Ont., archt.

Montclair Constr. Co., 5515 Western Ave., Montreal, Que., CA, **$450,000.** SHOPPING CENTER unit, MONTREAL, QUE. Henry Morgan & Co. Ltd., Pie IX Blvd. and Jean Talon St., Montreal, Que.

Komo Constr. Ltd., 1500 St. Vallier St., Quebec City, Que., LB, **$950,000**, 100 HOUSES at town site, Bersinnis, 6 mi. from Grand Renous at Bersinnis River, QUEBEC CITY, QUE. Quebec Hydro-Electric Power Comn., 107 Craig St. W., Montreal, Que., L. O. Sullivan, c/o owner, engr.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska**—CENTRAL HEATING and POWER PLANT—B.A. 3/7—U. S. Eng., Evergreen Hall, 3013 Arcade Bldg., Seattle 1, Wash., 50x178x100 ft. steel frame addn. to central heating and power plant, incl. installation of equip., Eielson Air Force Base, Inv. ENG 95-507-53-58. Plans deposit $25. CD 11/25.

† **Alaska**—STORAGE BLDG., etc.—B.A. 3/10—U. S. Eng., Anchorage, 6,400 sq. ft. rein.-con., masonry lub. oil and vehicle storage bldg., 60 ft. deep well, Ladd Air Force Base, ENG 95-507-53-41. Plans deposit $10. CD 11/25.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Peter Kiewit Sons Co.**, Longview, Wash., CA **$1,236,096**, est. $1,105,788, two 3 story bsmnt., 13,000 sq. ft. rein.-con. barracks, Ladd Air Force Base. ENG 95-507-53-53, ALASKA. U. S. Eng., Evergreen Hall, 3013 Arcade Bldg., Seattle 1, Wash. Bids Jan. 28. CD 2/5, under LB.

PUERTO RICO

HEAVY CONSTRUCTION

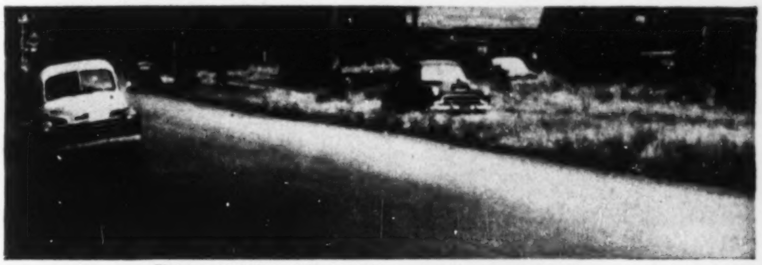
LOW BIDS AND CONTRACTS

Venancio Morales, P. O. Box 1742, Bayamon, Puerto Rico, CA. **$61,303.** Constr. 1.7839 km Sonadora Municipal Rd., AGUAS BUENOS, PUERTO RICO. P. Wks. Dpt., San Juan, Puerto Rico. Bids Dec. 12.

How the

MOTO-PAVER

View of S. George St., Rome, showing one "slab" laid against the far curb.



The completed resurfacing job—a smooth, waveless surface.

Cut Resurfacing Costs in Rome (N. Y.)

Shown above are before and after views of a recent street resurfacing program in Rome, N. Y., in which a H & B Moto-Paver was used. This program involved a total of 2.47 miles, at an average cost of 52c per sq. yard, including all materials, labor and equipment rental costs. (Approximately 60 days after the paving was completed, a light seal coat was applied. Cost of this seal coat was not included in the 52c.)

Moto-Paver does the complete mixing and laying job—in one continuous operation. As shown here, it produces a smooth, waveless surface—even on rough, rutty and irregular pavements. Road speeds up to 25 mph. make possible quick moves from job to job. *Moto-Paver* gives a uniform mix using beach sand, gravel, crushed stone or slag aggregates, and tars, cutback asphalts, road oils, emulsions or other bituminous materials.

For specifications and further information see your local H & B distributor or write for Bulletin MP 49.

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HETHERINGTON & BERNER INC.

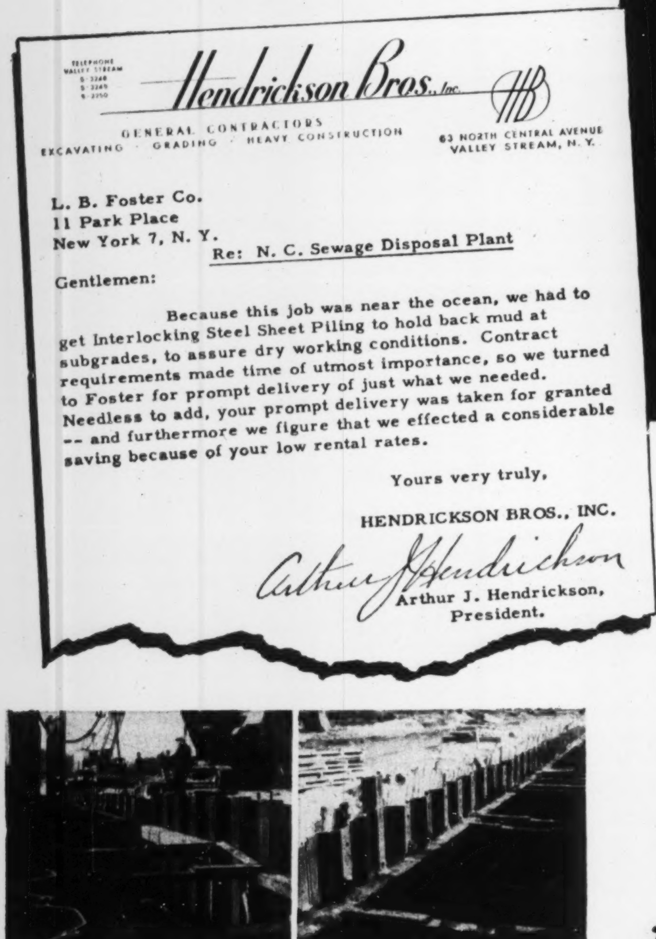
Engineers—Manufacturers

730 Kentucky Ave. Indianapolis 7, Indiana

HIGH UP

. . . on the list of "Economy Short-cuts" for the $4 Million Nassau County Sewer Expansion was . . .

FOSTER RENTAL PILING



TELEPHONE
VALLEY STREAM
5-2248
5-2249
5-2250

Hendrickson Bros., Inc.

GENERAL CONTRACTORS
EXCAVATING · GRADING · HEAVY CONSTRUCTION

63 NORTH CENTRAL AVENUE
VALLEY STREAM, N. Y.

L. B. Foster Co.
11 Park Place
New York 7, N. Y.

Re: N. C. Sewage Disposal Plant

Gentlemen:

Because this job was near the ocean, we had to get Interlocking Steel Sheet Piling to hold back mud at subgrades, to assure dry working conditions. Contract requirements made time of utmost importance, so we turned to Foster for prompt delivery of just what we needed. Needless to add, your prompt delivery was taken for granted -- and furthermore we figure that we effected a considerable saving because of your low rental rates.

Yours very truly,

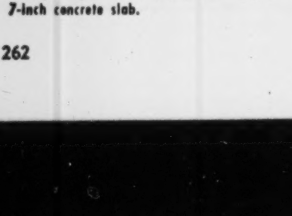
HENDRICKSON BROS., INC.

Arthur J. Hendrickson

Arthur J. Hendrickson,
President.

1,000 feet of Foster Rental Piling serviced 10,000 feet of this job for Hendrickson Bros. They rented 1,000 ft. to be driven in the relatively soft subsurface a total of ten times—piling being in place a week before pulled for re-use in advanced location. The complex piling requirements were best serviced from Foster's large rental stocks with the exact lengths and the exact sections the job required, at economical low rental rates.

Let us quote you on our low-cost piling rentals—prompt service from five Foster warehouses. Send for New Piling Catalog illustrating diagrams and data for all standard-make sections, ask for Catalog EP-2A.



66-inch diameter precast conduit at an average depth of 35 ft.—placed atop a 7-inch concrete slab.

Piling holds back mud for The Sanitary Trunk Sewer conduit which ran 7 miles on Long Island's South Shore.

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CONSTRUCTION REPORTS—Third Section

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

February 26 New Jersey

† **Md., Carderock**—B.A. 2/25—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., raw water supply and fire mains, David W. Taylor Model Basin, NOY 75413. Plans deposit $10.

N. Y., New York—CONTACT RAILS—B.A. 2/26—Bd. Transportation 370 Jay St., Brooklyn, Zone 1, replacing contact rails on Lenox Avenue-White Plains Road Line, IRT Div. Bronx Boro.

† **D. C., Wash.**—BACKFLOW PREVENTION DEVICES, etc.—B.A. 3/4—Dist. P. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C., backflow prevention devices and condensate return lines, Contract NOY 75415; gas fired thawing pits, Contract NOY 75414, Naval Gun Factory. Plans deposit $10 each.

Pennsylvania—B.A. 3/11—General State Auth., 18 and Herr Sts., Harrisburg, construct facilities, roads and repairs to dam at Bendigo Park, Glen Hazel, Elk Co. $140,000. Plans deposit $10. Morris Knowles, Inc., 1312 Park Bldg., Pittburgh, engr.

N. Y., Rockaway—EMBANKMENTS—B.A. 3/12—Bd. Transportation, 370 Jay St., Brooklyn, Zone 1, Rte. 119-G (Rockaway Route), Jamaica Bay Crossing, embankments from North Channel to Beach Channel, Queens Boro.

BIDS ASKED—BUILDINGS

N. J., Mahwah—SCHOOL—B.A. 2/24—Bd. Educ. Mahwah Twp., Mahwah, Betsy Ross School addns., alterations; Commodore Perry School addns., alterations; Geo. Washington School addns., alterations.

N. J., New Providence—SCHOOL—B.A. 2/24—Bd. Educ., New Providence Boro, elementary school.

N. J., Plainfield—SCHOOL—B.A. 2/24—Bd. Educ., Plainfield, Washington School addn., alterations, Darrow Ave. $380,000. CD 1/28/49.

N. Y., Rockaway—HOUSING—B.A. 3/3—New York City Housing Auth., 63 Park Row, New York, Zone 28, foundations and general constr.; heating and ventilating; electrical work, plumbing; installation of elevators for Hammel Houses, Proj. No. NY 5-27, in area bounded generally by Freeway, Hammell Blvd., Beach 81st St., Rockaway Beach Blvd. and Beach 86 St., Queens Boro. Plans deposit $75, $25 elevators. Extended date. CD 12/31.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Warshaw Constr. Co.**, 101 Park Ave., New York 17, N. Y. CA. **$1,605,400**, Queens College LIBRARY, FLUSHING, N. Y. Bd. Higher Educ., Queens College Business Office, 65-30 Kissena Blvd., Flushing 67, N. Y. Bids Jan. 14. CD 2/10, under LB.

▲ **Sam Lefrak**, 97-27, 64 Rd., Forest Hills, N. Y. Owner Builds. **$ 1,400,000**. 6 story APARTMENT. Darmouth St., east of Yellowstone Blvd.; **$1,200,000** 6 story apartment, Clyde St., east of 67 Ave., FOREST HILLS, N. Y. CD 1/28.

▲ **Morton Bros.**, 89-30, 161 St., Jamaica, N. Y. Separate Contracts. **$1,000,000**. Morton Village SHOPPING CENTER, Old Country Rd. between Central Park and Plainview Rds., PLAINVIEW, N. Y. Leo V. Berger, 356 Fulton St., Brooklyn 1, N. Y., archt. Blitman & Tischler, 101 Park Ave., New York 17, N. Y., engrs.

▲ **Rambling Brook Estates**, c/o Lester Cohen, archt., 41 Main St., Hackensack, N. J. Owner Builds. **$1,600,000**. 94 HOUSES on tract on Maple Ave., RIDGEWOOD, N. J.

S. & H. Everts Co., Danville Rd., Bloomsburg, Pa., CA. **$635,000**, general constr., Junior and Senior HIGH SCHOOL for Green Park Union School Dist., LOYSVILLE, PA. State Public School Bldg. Auth., 101 S. 25 St., Harrisburg, Pa. Bids Jan. 8. CD 1/13, under LB.

▲ **Standard Constr. Co.**, 1010 Vermont Ave. N.W., Wash., D. C., LB, **$3,574,897**, Section 1 of HOUSING Project DC-1-18 East Capitol Dwellings, East Capitol St. and 58 St. N.E., WASH., D. C. National Capitol Housing Auth., 1728 L St. N.W., Wash., D. C. Bids Feb. 10. CD 1/27.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Ga., Camp Stewart**—MOTOR POOL—B.A. 2/26—U. S. Eng., 200 E. St. Julian St., Savannah, motor pool and facilities, ENG-09-133-53-46. Plans deposit $25. Extended date. CD 1/21.

W. Va., Pratt—B.A. 2/27—Town, sanitary sewers. J. H. Milam, 1214 Myers Ave., Dunbar, engr.

† **S. C., Myrtle Beach**—APRON, RUNWAY, etc.—B.A. 3/4—U. S. Eng., Customhouse, Charleston, grading, draining, paving aircraft parking apron, runway and taxiway extens., ENG-38-081-53-18. Plans deposit $25. Extended date. CD 1/23.

Fla., Vero Beach—B.A. 3/10—Swords Bros.-McDougal Co., Inc., Vero Beach, 600,000 cu. yd. hydraulic fill of 80 acres of marsh land, $75,000. Plans deposit $25. R. D. Carter Eng. Co., Vero Beach, engr.

† **Ga., Valdosta**—JET ENGINE TEST CELL FACILITY—B.A. About 3/10—U. S. Eng., 200 E. St. Julian St., Savannah, jet engine test cell facility, Moody Air Force Base, ENG-09-133-53-61.

N. C., Charlotte—COLISEUM-AUDITORIUM—B.A. 3/13—At office J. P. McMillan, chn. Bldg. Comn., coliseum-auditorium for City, H. A. Yancey, mgr., City, Hall. Plans deposit $125 general constr., $25 each mech. A. G. Odell, Jr. & Assoc., 109 W. 3 St., archts. CD 9/3.

† **Ga., Macon**—WAREHOUSE—B.A. About 3/14—U. S. Eng., 200 E. St. Julian St., Savannah, ordnance warehouse, Warner Robins Air Force Base, ENG-09-133-53-53.

† **Ga., Fort Benning**—TRANSMISSION LINE—B.A. About 3/19—U. S. Eng., 200 E. St. Julian St., Savannah, gas transmission line, ENG-09-133-53-58.

† **Ga., Savannah**—PARKING APRON, etc.—B.A. About 3/23—U. S. Eng., 200 E. St. Julian St., concrete aircraft parking apron with grid duct system and misc. road constr., Hunter Air Force Base, ENG-09-133-53-51.

BIDS ASKED—BUILDINGS

Va., Roanoke—GARAGE—B.A. 2/24—At office Eubank & Caldwell, archts., Boxley Bldg., 4 story rein.-con. parking garage for Merchants Parking Assn., c/o archts. $375,000.

Fla., Jacksonville—SCHOOL—B.A. 3/3—Duval Co. Bd. P. Instruction, 605 Ocean St., Wilder Park School. $525,000. CD 1/16.

N. C., Camp Lajeune—HOUSING—B.A. 3/12—Public Housing Admin., 900 N. Lombardy St., Richmond, Va., Defense Housing Projects NC3-D1 and NC3-D2. Plans deposit $50.

▲ **Fla., Jacksonville**—SCHOOL—B.A. 3/18—Duval Co. Bd. P. Instruction, 605 Ocean St., Paxon Field High School. $1,000,000. CD 8/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **J. R. Houska Co., Inc.**, P.O. Box 598, Norfolk, Va., CA. **$168,637**, Public Works Bldg., Fleet Air Defense Training Center, NOY 75758, DAM NECK, VA. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Sturgeon, Clark & Buhr, Midtown Bldg., Wards Corner, Norfolk, Va., archts. Bids Feb. 3. CD 1/19.

† **L. T. Zoby**, 1082 W. 42 St., Norfolk, Va., LB **$167,243**. site preparation on utilities, electronics and ordnance shop, Naval Shipyard, NOY 74855, Spec. 35781, PORTSMOUTH, VA P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Norfolk, Va. Bids Feb. 3. CD 1/22.

† **Babcock & Wilcox Co.**, Candler Bldg., Atlanta, Ga., LB **$144,322**, furnishing, installing 2 boilers, etc., Warner Robins Air Force Base, MACON, GA. U. S. Eng., 200 E. Julian St., Savannah, Ga. Bids Feb. 3.

▲† **Henry C. Beck Co.**, First National Bank Bldg, Atlanta, Ga., CA, **$1,493,557**, fleet maintenance hangar, Naval Air Station, NOY 71540, KEY WEST, FLA. Dpt. Navy, Officer in Charge of Construction, Box 465 Naval Base, S. C. Bids Jan. 27. CD 2/2, under LB.

Harbert Constr. Corp., 2208 8 Ave. S., Birmingham, Ala., LB, **$134,870** water filter plant imprvs, CORDOVA ALA. City Cordova, Ala. Bids Feb. 6. CD 1/28.

Farnsworth & Chambers Co., P.O. Box 332, New Orleans, La., LB **$331,000**, swimming pool and bath house at Lincoln Beach, NEW ORLEANS, LA. Orleans Levee District, Civil Courts Bldg., New Orleans, La. Bids Feb. 6. CD 1/16.

BUILDINGS

LOW BIDS AND CONTRACTS

John W. Daniel & Co., P.O. Box 458, Danville, Va., CA **$592,339**, Negro HIGH SCHOOL and new ELEMENTARY SCHOOL, near BUCKINGHAM, VA. Buckingham County School Bd., Buckingham, Va., Bids Feb. 3. CD 1/8.

▲† **U. S. Eng.**, foot of Front St., Norfolk, Va., cancelled bids to have been opened Feb. 10, landships, warehouses and marine railway and repair shop, ENG-44-110-53-15. FORT EUSTIS, VA. Est. **$5,014,000**. Will re-advertise. CD 2/3.

▲ **Algernon Blair, Inc.**, 1st. Natl. Bank Bldg., Montgomery Ala., CA **$2,000,000**. 270 frame RESIDENCES, Loxley Gardens, PORTSMOUTH, VA. Loxley Gardens, Inc., George T. McLean Co., Inc., High St. and Belt Line Ry., Portsmouth, Va. H. Reid Hearn, Jr., 1306 Main St., Columbia, S. C., archt. CD 12/15.

▲ **Seabright Constr. Co.**, 42 and Wood Sts., Wheeling, W. Va. CA, general contract;

Erb Electric Co., Wheeling, W. Va., CA, electrical work;

Culley Plumbing & Heating Co. 1224 Chapline St., Wheeling, W. Va., CA, plumbing and heating Soda-Chlorine PLANT, MOUNDSVILLE, W. VA. Allied Chemical & Dye Corp. (Solvay Process Div.) 61 Broadway, New York, N. Y. Total est, **$15,000,000**. CD 1/16/52.

J. S. Ferree, Greensboro, N. C. LB **$282,088**, SALES-GARAGE BLDG., 44,000 sq. ft., GREENSBORO,

Better Results WITH GLEDHILL EQUIPMENT

for example . . .

THE EARTH MOVER

Will work with any wheel or small crawler type tractor capable of pulling 2 14" plows. Is front dump type scraper. Hydraulic control regulates depth of cut as well as dumping and spreading. Comes in 1½ and 2½ yd. sizes.

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This far-reaching yet low-pressure sprayer is just the ticket for roadside weed control. Field tested and found not only effective but most economical in operation. Two sizes—completely equipped with 50' hose attachment for hard-to-reach places.

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Kern Instrument Division
PAUL REINHART & CO., Inc.
68 Beaver Street, New York City

N. C. North State Chevrolet Co., Greensboro, N. C. Watson & Hart, Greensboro, N. C., engrs. Bids Feb. 3. CD 1/13.

† **Riley Stoker Corp.**, 221 Builders Bldg., Charlotte 2, N. C., CA **$394,209**, STEAM GENERATING UNIT, CHARLESTON, S. C. P. Wks. Officer and Officer in Charge of Construction, P.O. Box 365, Naval Base, Charleston, S. C. CD 6/25.

Dawson Eng. Co., 10 Gillon St., Charleston, S. C. CA. **$893,798**, KITCHEN and BAKERY addn. at South Carolina State Hospital, COLUMBIA, S. C. State Mental Health Comm. State Capitol, Columbia, S. C. Bids Jan. 29. CD 2/10, under LB.

A. C. Samford, P.O. Box 1229, Albany, Ga., LB **$597,427**, Senior High School, MOULTRIE, GA. City, City Hall, Moultrie, Ga. Bids Jan. 5. CD 1/28.

Herbert Hodgman, 1525 San Rafael Ave., Coral Gables, Fla., CA, **$338,635**, one RESIDENCE, MIAMI BEACH, FLA. W. L. McKnight, 40 La Gorce Circle, Miami Beach, Fla.

Johnson Constr. Corp., 1210 E. Colonial Dr., Orlando, Fla. Owner Builds, **$400,000** OFFICE, ORLANDO, FLA.

▲ **McAdams, Inc.**, c/o Lucian M. Dent, archt., 988 Falls Bldg., Memphis, Tenn. Owner Builds. **$1,000,000.** 126 RESIDENCES, MEMPHIS, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS
STREETS AND ROADS
February 25 Michigan

Mich., Detroit—B.A. 3/3—Office, G. R. Thompson, city engr., Dpt. P. Wks., Guardian Bldg., Contr. PW 2103, Livernois (E) Relief sewer north of Seven Mile Rd. located in north central part of Detroit in Canterbury Rd., Warrington, Pembroke and Norfolk for City. Plans deposit $15. CD 1/5.

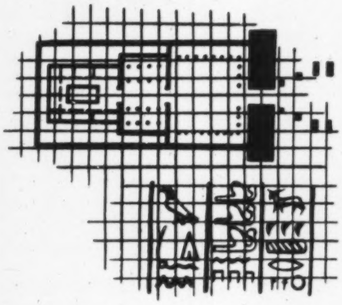
Mich., Detroit—B.A. 3/3—Office, G. R. Thompson, city engr., Dpt. P. Wks., Guardian Bldg., Group 53-1, grading draining, paving 2,595 ft. Woodbine St. from Puritan to McNichols Sts., PW 1941F; 302 ft. Artesian St. from Elmira to Fitzpatrick Sts., PW 1992W; 1,280 ft. Belton St. from Schaefer to Sorrento Sts., 375 ft. Sussex St. from Pembroke to Jas. Couzens Sts., PW 2200P, 453 ft. Cambridge St. from Rutherford to Forrer Sts., PW 2201P; 357 ft. Kentucky St. from Oakman to Westfield Sts., PW 2202P; 744 ft. Addison St. from Dennison to 120 ft. north of Smart Sts., PW 2203P; 1,513 ft. Mackenzie St. from Wyoming to Cloverlawn Sts., PW 2204P; 1,184 ft. Florence St. from Ferguson to Rutherford Sts., PW 3306P; 500 ft. Remington St. from Norwood to Wexford Sts., PW 2207P; Group RC 53-1, 52,500 sq. yd. Oakland St. from Bethune to Highland Park Sts., city limits (Woodland St.) PW 1497; 4,400 sq. yd. Bethune St. from Beaubine to Oakland Sts., PW 1499, 31,000 sq. yd. Chene St. from Atwater to Gratiot Sts., PW 2028; 63,000 sq. yd. Beubine St. from Bethune to Adams Sts., PW 2030; 25,000 sq. yd. Hayes St. from Seven Mile Rd. to Eight Mile Rd., PW 2031; 70,275 sq. yd. Puritan St. from Livernois to Greenfield Sts., PW 2032; 66,140 sq. yd. Vernor Hy. from 24 to Waterman Springwells to Woodmere Sts., PW 2033; 76,170 sq. yd. W. Chicago St. from Greenfield to Spinoz Dr. (city limits) PW 2034, for City. CD 1/7.

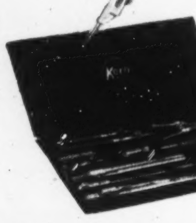
▲ **Ind., Indianapolis**—B.A. 3/12—Bd. P. Wks. R. K. Munter, pres., 104 City Hall; Zone 4, 2½ mi. rein.-con., concrete sewer pipe, 38 St. to 37 and Fall Creek to Linwood Ave. $1,000,000. W. R. Hunt, City Hall, city engr. CD 5/12.

Mich., Detroit—B.A. 3/17—Office, G. R. Thompson, city engr., Dpt. P. Wks., Guardian Bldg., Contr. PW 1432, Conant-Mount Elliott Relief Sewer located in Leib St. and Leib St. (extended) right-of-way from Jefferson Ave. to Detroit River, for City. Plans deposit $15. CD 1/5.

BIDS ASKED—BUILDINGS

Mich., Birmingham—SCHOOL—B.A. 2/24—City, Ames F. Gregory, secy. School Dist., brick, steel Quarton





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Elementary School addn., Oak Blvd. and Chesterfield Ave., $300,000. Plans deposit $25 refundable, Frederick D. Mason, 2908 N. Woodward St., Royal Oak, archt. CD 11/25.

▲ **Mich., Flint**—SCIENCE and APPLIED ARTS—B.A. 3/5—Flint Junior College, J. A. Anderson, secy. Bd Educ., Flint, 3 story, 228x480 ft., brick steel, concrete, Science and Applied Arts Bldg., Charles Stewart Mott unit, Gilkey Creek, $1,000,000. Bids 2/5 cancelled. Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, archt. A. Alexander Nurmi, 712 W. Court St., engr. CD 1/15.

Mich., Flint—COLLEGE UNIT—B.A. 3/5—Flint Junior College, J. A. Anderson, secy. Bd. Educ., Flint, brick, steel, 45,000 sq. ft. Harlan H. Curtice college unit, Gilkey Creek, $600,000, Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, archt. S. Alexander Nurmi, 712 W. Court St., engr. CD 1/27.

▲ **Ind., Indianapolis** — DORMITORY — B.A. 3/10 — Butler University Bd. Trustees, M. O. Ross, pres. Jordan Hall, c/o Butler University, 108 E. Washington St., 4 story 281 unit, stone, brick, rein.-con. men's dormitory Hampton Dr., Sunset Ave. 44 St. and Alpha Lane, $1,090,000. Plans deposit $50. Ammermann, Davis & Stout, K. of P. Bldg., Zone 4, mech. engr. McGuire & Shook 1400-01 Fletcher Trust Bldg., Zone 4, archts. CD 9/18.

BUILDINGS

LOW BIDS AND CONTRACTS

Steward Constr. Co., Box 446, Marion, O., CA. **$320,760.** 2 story, concrete, steel, brick Olentangy HIGH SCHOOL, DELAWARE, O. Liberty Union School Dist., Delaware, O. McLaughlin & Keil, Lima, O. archts.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES

February 24 Kansas March 3 Oklahoma
March 16 or April 2 Missouri

STREETS AND ROADS

March 3 Oklahoma

Ark., Bentonville—B.A. 2/27—City,City Hall, WW imprvs. Approx. $200,000. Sullivan & McGoodwin, Fayetteville, engrs. CD 7/11/45.

† **Texas**—B.A. 2/27—U. S. Eng., 100 W. Vickery St., Fort Worth, reservoir clearing, Part II, Belton Dam and Reservoir, Leon River, Inv. No. CIVENG—41-443-53-39. CD 6/9/44.

Ia., Maquoketa—B.A. 3/2—City, City Council, 187,733 sq. yd. paving alternate bids on 6 in. of 7 in. concrete, bit. or asph. surf., 187,733 sq. yd. subgrade preparation, 86,758 lin. ft. curb and gutters, etc. Three combinations or propositions are to be bid on. Plans deposit $25. Howard R. Green Co., 204-213 Bever Bldg., Cedar Rapids, engr.

† **Oklahoma**—B.A. 3/2—Soil Conservation Service, Dpt. Agriculture, 3600 McCart St., Fort Worth, Tex., detention reservoirs, McClain Co., Inv. 99-53. $50,000. CD 1/26.

† **South Dakota and Nebraska**—B.A. 3/3—U. S. Eng., 1709 Jackson St., Omaha, Neb., seeding and planting in connection with Gavins Point Proj. in Cedar Co. Neb. but near Yankton, S. D., Inv. 25-066-53-184. CD 6/1/44.

† **New Mexico**—B.A. 3/5—U. S. Eng., Box 1538, Albuquerque, Santa Ana Pueblo protection works, public use facilities, incl. bridge, levees, concrete pump station, Pueblo water sys., ditches, etc., Jemez Creek, Jemez Canyon Dam and Reservoir CIVENG-49-005-43-4. Approx. $200,000.

BIDS ASKED—BUILDINGS

▲ **Tex., Houston**—SEMINARY BLDGS.—B.A. 2/25—St. Mary's Seminary, 1018 Preston Ave., library and admin. $650,000; classroom bldg. $325,000; refrectory, dining hall, laundry, $325,000; sanctuary, $300,000; power and heating plant, $75,000; laboratory and science, $300,000; dormitory, $350,000. Bid date changed. Maurice J. Sullivan, 3901 Travis St., archt. Reg. F. Taylor, Bankers Mortgage Bldg., and Francis J. Niven, 3908 Main St., engrs. CD 2/10.

Mo., Clayton (St. Louis 5 P.O.)—DORMITORY—B.A. 2/26—Concordia Seminary, 801 DeMun Ave., Zone 5, (selected list bidders), 2 story, bsmnt., brick, reincon., 25,000 sq. ft. dormitory incl. offices, etc. $330,000, Kenneth E. Wischmeyer, Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, archt. CD 11/14.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Griffin Constr. Co., 6000 Merriam Blvd., Merriam, Kan. LB, **$399,000**, Contract 13, 42 in. water supply line;
Danco Constr. Co., 1410 W. 9 St., North Little Rock Ark., LB, **$99,398**, 15,700 lin. ft. 16- to 30-in. water lines, LITTLE ROCK, ARK. City, City Hall, Little Rock, Ark. Bids Jan. 30. CD 12/19.

† **Cook Constr. Co.**, Hy. 80 W., Jackson, Miss., CA, **$966,150** relocation, earthwork, structures, track relocation of Missouri Pacific R.R. at Kirwin Dam Missouri River Basin Proj. Solomon Div., Spec. DC 3861, KANSAS Bureau Reclamation, Dpt. Interior Kirwin, Kan. Bids Jan. 22, awarded Feb. 5. CD 1/26, under LB.

▲† **Badgett Mine Stripping Corp.**, P.O. Box 695, Joplin, Mo., CA. **$1,438,955**, construct Big Slough-Cowskin Floodway, Parcel "B," Phase I, KANSAS. U. S. Eng., P.O. Box 61, Tulsa 2, Okla. Bids Jan. 8. CD 1/13, under LB.

† **List & Clark**, 729 Railway Exchange Bldg., Kansas City, Mo., LB **$310,352**. est. $359,020, clearing and excavation of channel of Fort Worth Floodway, (Part 4), 1,330,000 cu. yd. excav. and 34,400 cu. yd. compacted fill for channel, CIVENG-41-443-53-35, TEXAS. U. S. Eng., 100 W. Vickery St., Fort Worth, Tex. Bid Feb. 5. CD 1/22.

Fish Eng. & Constr. Co., M & M Bldg., Houston, Tex. CA **$425,000**, design and construct 37 mi. 12 in. lateral gas lines radiating from Chocolate Bayou field area, near Angleton, Brazoria Co., TEXAS. Texas Illinois Natural Gas Pipe Line Co., 20 N. Wacker Dr., Chicago, Ill. CD 9/28/50.

FAR WEST

BIDS ASKED—BUILDINGS

Calif., Torrance—SCHOOLS—B.A. 2/27—Torrance Unified School Dist., 2335 Plaza del Amo, two new schools, Evely Carr Elementary and Howard Wood Elementary and Madrona Elementary School addn. $300,000. Plans deposit $50. Schrieber & Peterson, 2380 Atlantic Blvd., Los Angeles, archts. CD 10/1.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **American Pipe & Constr. Co.**, 518 N. E. Columbia Blvd., Portland, Ore., CA, **$1,098,600** steel penstock manifold and outlet manifold for Palisades dam and power plant, Palisades Proj., Spec. DS 4839, IDAHO. Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo. Bids Jan. 8, awarded Feb. 4. CD 1/15, under LB.

† **Price—McNema Constr. Co.**, 5616 San Vincente Blvd., Los Angeles, Calif., CA, **$788,213**, airmen's dormitories, mess and administration bldg., West March Air Force Base, ENG 04-353-53-64, MARCH AIR FORCE BASE, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Jan. 29. CD 2/6, under LB.

CANADA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Dominion Constr. Co. Ltd., 150 W. 1 Ave. Vancouver, B. C., CA, **$300,000**, design and construct, 260 ft. long 120 ft. wide, dock and warehouse, asph. surfacing VANCOUVER, B. C. Northland Terminal Co. Ltd., Commissioner St., Vancouver, B. C. Awarded Jan. 30.

▲ **Pentagon Constr. Co. Ltd.**, 1225 Bishop St., Montreal, Que., CA, **$2,400,000**, 600 ft. railway ore dock extension, superstructure, PORT ARTHUR, ONT. Canadian National Rys., Western Region, J. L. Charles, ch. engr., Winnipeg, Man. Bids Jan. 12, awarded Feb. 5. CD 2/6, under LB.

ONE MAN CONTROL
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The gravel operation at right is one of three modern plants at different sites, producing about 500,000 tons of concrete aggregate annually for a large Ohio firm, and all depending solely on Sauerman Rapid-Shifting Scraper Machines to dig and move their material. The machine in the picture uses a 3-cu. yd. Sauerman Crescent bucket operating on a 550-ft span. It has dug a sizable pit down to the water level and will extend the pit in two directions, besides continuing under water to the full depth of the deposit.

SAUERMAN EARTHMOVERS

Labor saving efficiency . . . low initial cost . . . rugged digging and hauling power . . . all-around versatility . . . and moderate power requirements . . . are distinct advantages that have made Sauerman Earthmoving Machines famous for over forty years. Sauerman Machines spot and dump automatically under the easy control of an operator situated in a comfortable cab overlooking the work area.

Drag Scraper Excavator: Combines digging power, hauling speed and long reach for efficient pit or hill excavation, reclamation and handling of materials, wet or dry.

Slackline Cableway Excavator: Unequalled for operations that require deep digging, especially under water, and delivery to a high point. Reaches hundred of feet into ponds, wet pits, sludge basins and similar areas, while operator remains in a safe spot.

Mobile Tower Excavator: Self-propelled drag scraper machine, affording great digging capacity, long reach and exceptional mobility. Ideally suited to stripping operations, pit excavation, rehandling mine waste and for stockpiling.

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Sauerman also builds scraper-stockpilers, scraper-loaders, power rakes and related equipment. For full information send for illustrated, descriptive literature. Consult our engineers for assistance in your earthmoving or bulk materials-handling problems.

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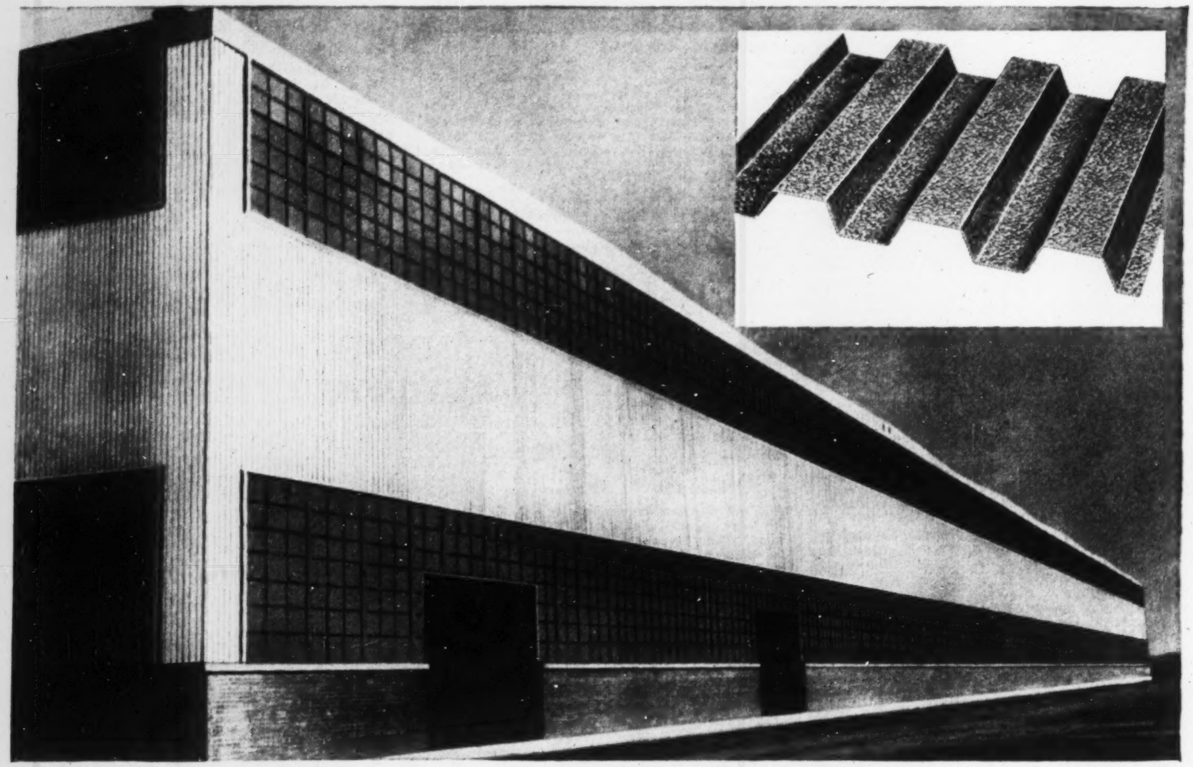

General Contractors:
Turner Construction Co., Struck Construction Co.

One of the many large units at "Appliance Park," Buechel, Ky., where General Electric will consolidate its major appliance manufacturing. This new siding used throughout.

Here's the siding material industry has long sought! Sharp vertical lines in modern design, with all the advantages of rustproof, corrosion-resistant aluminum...low applied cost, long life, low maintenance (no painting), strength with light weight, heat-reflection that improves interior comfort summer and winter. No wonder this is what General Electric chose for siding throughout its vast new Appliance Park project. It ranks tops with architects, engineers, maintenance men and purchasing agents!

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Call Reynolds for literature and technical assistance on this new siding. For a material that performs as both roofing and siding, ask about Industrial Corrugated. Offices listed under "Building Materials" in classified phone books of principal cities. Or write
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WIDTH: Over-all width 33⅝", nominal coverage 32".

RIBS: Pitch 4" center to center, depth 1".

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Military demands for aluminum reduce supply, but Reynolds is rapidly expanding production. Rated orders receive priority handling.

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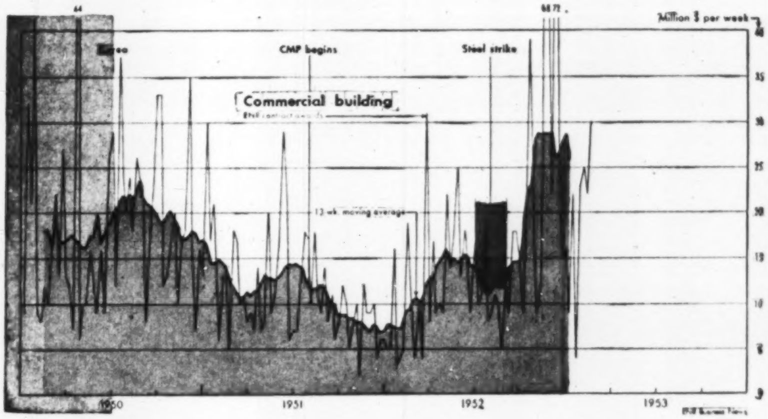
SEE "MISTER PEEPERS," starring Wally Cox, Sundays, NBC Television Network. **HEAR "Fibber McGee and Molly,"** Tuesdays, NBC Radio Network.



Commercial construction is setting record pace

Contracts for first seven weeks of 1953 running 2% ahead of previous record year; boom to continue

Commercial building, no longer held back by government controls and lack of steel, is setting a record pace, on the basis of ENGINEERING NEWS-RECORD contract awards for the first seven weeks of this year.

Contract awards for commercial building totaled $135 million in the first seven weeks of this year. That was 142% ahead of the comparable 1952 period and was 2% more than in the comparable period of 1950—the previous record year for commercial building.

The rush of contracts in commercial building has been going on since October, 1952. The pace slackened somewhat in January, but started to pick up again in February.

• **Backlog climbs**—Brightest feature of the outlook for commercial building in '53, aside from the current heavy flow of new contracts, is that new proposed commercial projects reported to ENR are coming in at a rate that is at an all-time high.

In the last four months, new commercial projects have been proposed at an average rate of $165 million per month—the increase has been impressive. New proposed work for the second half of 1952 was 46% higher than in the first half of the year and was more than double the dollar volume for the last six months of 1951.

For the whole of 1952, new proposed commercial building set a record with projects estimated to cost about $1,348 million. The continued spurt indicates a record market for commercial building in the months to come—and possibly for the balance of 1953.

• **Most active regions**—The big boom in commercial building has occurred mainly in the Middle Atlantic and Midwestern States, the regions that finished in first and second place, respectively, in dollar volume of 1952 commercial-building contracts.

Contract figures for the fourth quarter illustrate the point. In those three months alone, the Middle Atlantic States, led by New York and Pennsylvania, accounted for $152 million in commercial-building contracts. That was 21% more than in the first nine months of 1952.

And, in the Midwest, where Ohio provided most of the push, proposed commercial work in the final quarter of the year totaled $112 million, almost as much as in the first three quarters of 1952 combined.

Prestressing gets nod

The first prestressed-concrete bridge contract which has ever been let in Iowa has been awarded by Butler County officials on a bid of $9,265, which was $20 lower than for a reinforced-concrete structure. Contract went to Alfred W. Munsen of Boone, who will have the deck precast.

THE BUSINESS of HOME BUILDING

Explains business methods that make home building more profitable. Gives the business "know-how" needed to make a profit with minimum risk to your money . . . a practical understanding of economic factors that determine the market for your product . . . and the benefit of production knowledge based on the experience of other builders. From preparing a project-site map to selling the finished building, everything is discussed. **By K. B. Johnstone, Carnegie Institute of Technology, and C. E. Joern, Wm. Joern and Sons. 289 pages, 174 illustrations, $5.00**

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A helpful reference manual that can save you time, trouble, and money. It helps you ward off costly lawsuits by showing you—before you become involved—different types of legal troubles likely to occur in connection with construction work. It reviews and discusses 46 most common problems involved in the performance of a construction contract—indicates clearly how you can eliminate obstacles in your own construction relations. **By L. Vernon Werbin, Member, New York Bar. 227 pages, $5.00**

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Gives practical help—simply and readably put—to aid you in doing a better supervision job. Covers all the typical jobs and problems of hiring, discipline, accident prevention, promoting teamwork, delegating authority, labor relations, etc. Supplies practical techniques for handling such situations, with examples of specific solutions. Includes a discussion of the Taft-Hartley law as it affects the supervisor, an outline of a program for employee participation in management, etc. **By Alfred M. Cooper, 3rd Ed. 254 pages, $4.00**

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Pipelines get allocations

Twelve large crude-oil pipelines and 11 large petroleum-products lines with a total construction cost of $492.5 million were granted priorities assistance in order that they might purchase 251,306 tons of line pipe during the second quarter of '53, the Petroleum Administration for Defense announced last week.

Of the major projects, once crude line and five products lines received CMP allotments for the first time. They are:

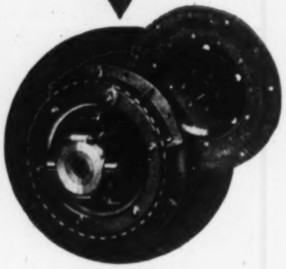
A 93-mi, 12-in. and 14-in. crude-oil feeder line to be built by the Platte Pipeline Co. from Big Horn Basin, Wyo., to the Chatham station of the Platte pipeline. Estimated cost was $3 million.

A 152-mi, 4-in. and 6-in. products line to be built by H. W. Bass & Sons, Inc., from Duval and Live Oak counties, Tex., to Corpus Christi, Tex., initial capacity, 9,000 barrels a day. Estimated cost was given as $2.8 million.

A 300-mi, 16-in. products line to be built by Wolverine Pipeline Co. from East Chicago, Ind., to Detroit, Mich., and Toledo, Ohio. Initial capacity of this line will be 95,000 barrels a day. Estimated cost: $15.4 million.

Seventy miles of 12-in. loops on an existing products pipeline between Borger, Tex., and Paola, Kan., to be built by Phillips Pipeline Co., to increase capacity of the line by 15,000 barrels a day. Estimated cost $2.8 million.

A 593-mi, 8-in. products line to be built by Continental Pipeline Co., from Billings, Mont., to Spokane, Wash. The initial capacity will be 14,000 barrels a day. Estimated cost: $14.1 million.



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311 Catherine Street, Rockford, Illinois, U.S.A.

ROCKFORD CLUTCHES

PHA asks bids for Greenbelt units

Twelve apartment buildings at Greenbelt, Md., were put on the market for open competitive bidding last week by the Public Housing Administration.

Containing 306 dwelling units, the apartments constitute the balance of dwellings at Greenbelt. Last December, PHA sold 1,580 units to the Greenbelt Veteran Housing Corporation.

Terms of the sale are 20% cash down payment with PHA taking a 25-year mortgage at 4½% interest for the balance.

Bids are scheduled to be opened March 19.

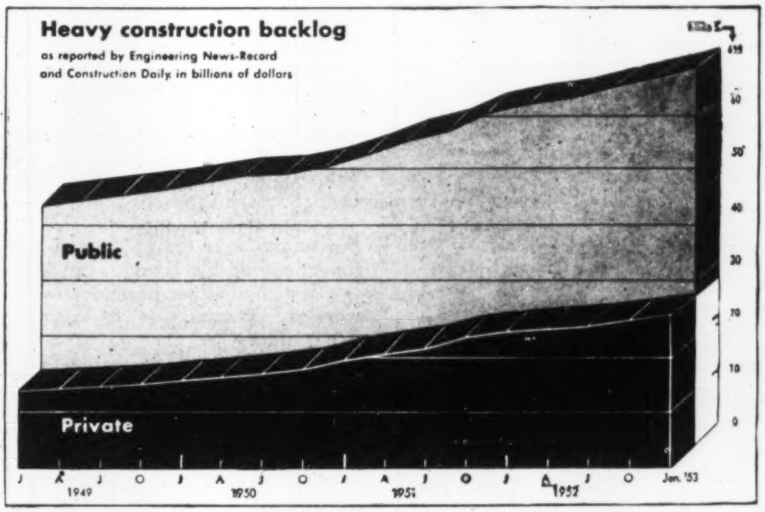
Steel misuse charged

The American Culvert & Fabricating Co., Cambridge, Ohio, last week was named by the National Production Authority in a 45-count complaint which charged unlawful use of 1,276 tons of steel.

Herman Rogovin, president of the company; Sara Fisk, secretary; and Theodore Rogovin, treasurer were named as respondents.

NPA charged that the company, which manufactures prefabricated steel bridges, improperly used NPA ratings between March 12, 1951, and May 24, 1952.

The authority has indicated it will ask, at a future hearing, that the company be denied NPA procurement privileges.



$1.9 billion added to backlog

January volume is largest proposed in single month since February, 1951; public works make up bulk of total

Proposed heavy construction estimated to cost $1.9 billion poured into ENR's backlog of heavy construction in January. It was the largest volume of new work proposed in a single month since February 1951, when the rush in defense industrial building helped set a record of $3.3 billion.

Public works accounted for $1.2 billion of the January proposed work. Private projects made up $700 million. The combined total, minus those projects removed from the backlog, resulted in a $700-million increase in the total backlog, which stands now at a new high of $69.4 billion.

The new total is $6.9 billion higher than a year ago, with public works up $3.5 billion and private work up $3.4 billion.

January is the third consecutive month of large gains in the backlog. Most of January's increase was in the public backlog, a net gain of $682 million, which brought proposed public work on record to $42.2 billion. Highways, with a $303-million increase, and earthwork and waterways with a $192-million gain contributed most.

Smaller gains recorded: sewerage, up $68 million; public buildings, including housing, up $65 million, and bridges up $50 million. The waterworks backlog also moved a little higher—up $16 million—but public unclassified construction declined $13 million.

Proposed private work increased by only $32 million to a total of $27.3 billion on account of an $81-million drop in the industrial building backlog. Private mass housing and commercial building increased their backlog by $82 million and proposed private unclassified construction was up $34 million.

Those changes in total backlog represent the difference between the flow of new proposed work recorded in January and the projects moving out that month.

• **Toll roads lead**—Toll highways led the parade in new highway work proposed in January, with three projects estimated to cost a total of $265 million. The largest was the 250-mi expressway for the Indiana Toll Road Commission, estimated to cost $150 million. Next in size was the four-lane toll highway in Louisiana to cost $90 million. The third project was the $25-million toll highway in Oklahoma.

In addition to the toll roads, the Illinois Division of Highways has announced a $46-million road-resurfacing program, and the Michigan State Highway Commission proposed a north-south expressway which was estimated at $20 million.

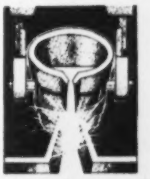
More bridge business is also in sight with $42 million in additional bridges proposed by the State of Washington Toll Bridge Authority.

The backlog of earthworks and

97 Years of Continuous Service and Good for Many Years to Come!

A section of 48" Cast Iron Pipe made by WARREN in 1866 was recently excavated in Woodlawn Cemetary, N. Y. Part of a 2500 foot supply line from the Kensico Reservoir, abandoned in 1943 due to major changes in New York City water distribution system. Cemetary Management decided to salvage this old pipe which was found to be in excellent condition after these years of service under pressures from 60 to 80 pounds psi. It's typical of "WARREN-CAST" Pipe!

Manufacturers of Jobbing Castings Up to 20 Tons in Weight in Gray Iron, Alloy Iron and Meehanite Metal.



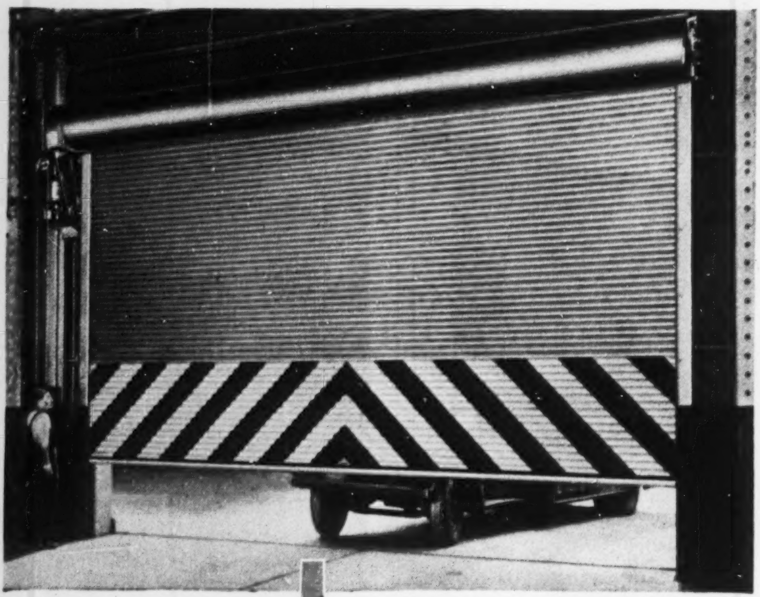
Send for literature

WF
FOUNDED 1856

WARREN FOUNDRY & PIPE CORPORATION

55 Liberty Street, New York 5, N. Y.
Sales Offices: 55 Liberty St., New York, N. Y.
75 Federal St., Boston, Mass.
183 Sitgreave St., Phillipsburg, N. J.
Plants: Phillipsburg, N.J. Everett, Mass. Mt. Hope, N.J.

"A CENTURY OF PROGRESS AND QUALITY CASTINGS"



KINNEAR STEEL ROLLING DOORS

Space-Saving Convenience

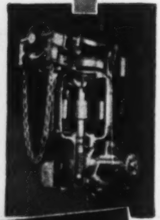
Plus a Bonus In Protection

It's easy to see why Kinnear Rolling Doors offer so many cost-cutting, time-saving advantages. They open straight upward and coil into a small area above the doorway. As a result, all floor, wall and ceiling space around the opening is *fully usable at all times.* No areas need to be reserved for door action. When opened, the doors clear the entire doorway. They stay completely out of the way, safe from damage by wind or vehicles.

Along with this high efficiency and convenience, you get a bonus of all-around protection and low-maintenance service. The strong but flexible *Kinnear-originated* curtain of interlocking steel slats gives extra protection against fire, wind, riot, intrusion, and accidental damage. Kinnear Rolling Doors are built to fit any openings in old or new buildings. Motor or manual control. Write for details.

MOTOR OPERATION

The rugged Kinnear Motor Operator shown at right can be added to any Kinnear Rolling Door for maximum speed, ease, and convenience of operation.



REMOTE CONTROL

In addition to push-button controls at the doorway, others may be added, at any number of convenient points, on motorized Kinnear Doors.

KINNEAR ROLLING DOORS

THE KINNEAR MANUFACTURING CO.

Factories: 1820-40 Fields Ave. • Columbus 16, Ohio
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waterways got a boost from $83.7 million in additional work proposed for Yellow Tail Dam in Montana, and from $65.3 million more work proposed for the Chesapeake and Delaware Canal. Other larger projects, all in Kansas, including a $38-million flood-control project at Strawn Dam; $21.7 million more work on Toronto Dam.

Large sewerage projects proposed this month were the $50-million plan for rebuilding the Kansas City sewerage system, and additional sewerage work in Chicago cost an estimated $20.6 million.

Atomic energy expansion plans added $110 million in proposed work at the Hanford Works in Richland, Wash., and a weapons assembly plant at Macomb, Ill., estimated to cost $29 million.

New public buildings proposed included an $18-million state mental hospital at Elko, Va. In private unclassified, the largest project was a $15.5-million proposed enlargement of Bunker Hill Naval Air Station in Peru, Ind.

Industrial projects set the pace in proposed private work. Largest projects were the $75.1-million refinery for Shell Oil at Seattle and a $60-million petrochemical plant in Orange, Tex., for Goodrich-Gulf Chemicals, Inc. Another large item in this category was the $19-million ferronickel processing plant which is to be built in Riddell, Ore., planned by M. A. Hanna Co.

In the private mass-housing area, the $20-million project proposed by Locals 807 and 707 of the International Brotherhood of Teamsters for New York, was found to be the biggest item.

A-plant subcontract let

A $230-million subcontract for mechanical construction on the Atomic Energy Commission's $1.2-billion gaseous diffusion plant near Portsmouth, Ohio, (ENR Aug. 21, 1951, p. 21) last week went to the Grinnell Corp. of Providence, R. I.

Peter Kiewit Sons Co., general construction contractor for the project, announced that the Grinnell subcontract includes process piping, auxiliary piping, instrumentation, equipment installation, and testing. The company already has set up a Portsmouth office.

Grinnell also is working on the Electric Energy, Inc., steam plant at Joppa, Ill., which will supply power for the AEC's Paducah plant.

New study shows industrial dispersion

A new study on ENGINEERING NEWS-RECORD contract awards for manufacturing plant construction shows a trend toward decentralization of large, new plants in the 12-month period from July, 1951, to June, 1952.

The study, by the Territorial Information Department of the Commonwealth Edison Co. and Public Service Co. of Northern Illinois, was based on contract awards for manufacturing plants costing $100,000 or more, as reported to ENGINEERING NEWS-RECORD.

Decentralization turned up as one of the major points in the study. The total dollar value of contracts represented by plants in 19 leading industrial centers was only 29% of the total value of all industrial contracts in the July, 1951, to June, 1952, period.

That was in sharp contrast with 42% for the same centers in the July, 1950, to June, 1951, period, and with an average of 40% during the five years from July, 1945, through June, 1950—the period between the end of World War II and the start of the Korean war.

• **Small plants stay**—While the percentage of dollar volume for the

(*Continued on page 274*)

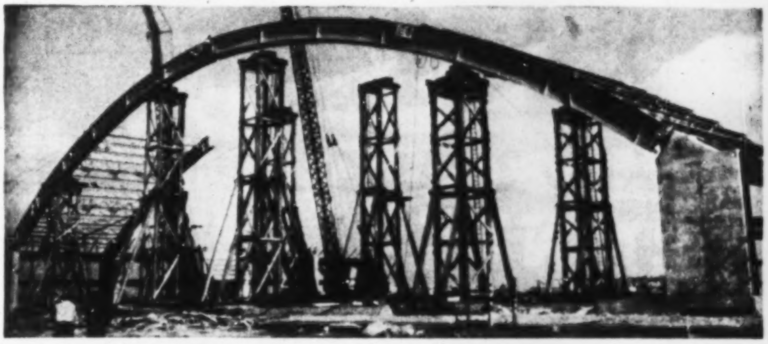
INDUSTRIAL EXPANSION IN LEADING METROPOLITAN AREAS

Contract Awards July '45 to June '52

Area	No.	Millions
Total	1,991	$2,624
Chicago-Gary	414	458
Philadelphia-Camden	147	433
Houston	151	289
Detroit	73	263
Pittsburgh	100	187
New York-New Jersey	132	157
Los Angeles	170	142
Cleveland	101	109
S. Francisco-Oakland.	104	80
Kansas City	34	76
St. Louis	97	61
Cincinnati	15	46
Milwaukee	64	41
Youngstown	27	34
Toledo	32	33
Baltimore	60	32
Buffalo	8	26
Wheel'g-Steubenville	17	26
Indianapolis	24	22
Minneapolis-St. Paul	65	21

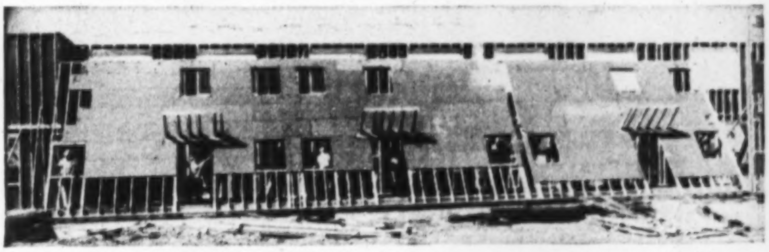
a. Less than $500,000

Source: Territorial Information Department, Commonwealth Edison Co. Public Service Co., Chicago, Ill. Based on ENR Contracts for manufacturing plants costing $100,000 or more.


Timber Towers Constructed by Sofarell at N. Y. International Airport

— Personalized Carpentry Service —

Our varied and broad experience of over four generations gives us an unusual background which is outstanding. Our knowledge and know-how creates harmony and a tempo which stimulates progress. Our ability to organize and schedule projects for fast production has proven most satisfactory to Owners, Contractors, Engineers, U.S.A.


Raising 64' Two Story Wall Section—Ferry-Grider—Buffalo, N. Y.

Corp Engrs., Bureau of Yards and Docks, Federal Works Agency and Municipal Authorities. We maintain one of the largest forces of carpenters. Work is detailed and supervised by our personnel. Consultants to Architects and Engineers on the Design, Practice and Theory of Wood Frame Construction.

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BUILDING COMPANY, INC.
161-19 JAMAICA AVE., JAMAICA, N.Y.
CARPENTRY SINCE 1905

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Surface Seal

PARKING LOT ASPHALT PAVEMENTS — LAST LONGER WHEN SEALED WITH J-16 BECAUSE:

- J-16 protects such pavements from damage caused by concentrated oil and gasoline drippage.
- J-16 protects such pavements from the oxidizing and volatilizing action of the sun.
- J-16 stops water seepage which causes softening or failure of base.
- J-16 stops frost action which results in progressive ravelling of asphalt pavement surface.
- J-16 provides a long lasting attractive satin black, easy-to-clean wearing surface.

Protective maintenance pays

For complete details on Jennite J-16—Write for Specifications and these two brochures.

MAINTENANCE INC.

WOOSTER, OHIO

Ford plans expansion

Ford Motor Co. has announced plans to build a new assembly plant in the San Francisco Bay area, probably near San Jose, to cost between $35 million and $50 million.

Construction on the plant will start this spring for completion in about two years.

The new plant will have double the capacity of the present Bay area plant, in Richmond, producing some 700 cars and trucks a day with a two-shift force of some 5,000. Company spokesmen indicated that the new plant would replace the present operation, stating that work at Richmond would continue "at least until the new facilities are occupied."

Trailer makers get orders for defense-housing units

Builders in the defense-housing program ran into some more competition from rubber-tired bungalows last week as the Public Housing Administration announced contract awards for 1,090 trailers for use in critical defense-housing areas.

Contracts have been let to the "M" System Trailer Coach Corp., of Vicksburg, Miss., for 600 four-sleeper trailers; to the Alma Trailer Co., of Alma, Mich., for 120 six-sleeper trailers, and to the Zimmer Boat and Trailer Co. of Chicago, for 360 four-sleeper trailers.

The "M" System allotment will be used at Camp Lejeune, N. C., and the trailers to be supplied by Zimmer and Alma will be used at Newport News, Va.

Site construction work will be let on a competitive bid basis through the Public Housing Administration office, Richmond.

Baltimore highway budget to reach $9 million

Baltimore will spend $9 million on new paving and viaduct work during 1953, James H. McKay, highway engineer, announced last week in a partial report of the work program that has been scheduled for this year.

More than $5 million would be allocated for paving new roadways, highways, alleys for sidewalks including a $2.8-million expenditure for resurfacing. McKay has allocated $3.7 million of specific loan funds for construction of the O'Donnell Street viaduct which is located in southeast Baltimore.

INDUSTRIAL EXPANSION
1945-52

Contract Awards July '45 to June '52

Region	No.	Millions
United States	4,295	$6,754
New England	254	178
Connecticut	128	71
Maine	9	3
Massachusetts	87	97
New Hampshire	9	4
Rhode Island	19	3
Vermont	2	a
Middle East	701	1,146
Delaware	27	56
D. C.	4	1
Maryland	68	42
New Jersey	123	143
New York	107	182
Pennsylvania	339	663
W. Virginia	33	59
Southeast	696	1,391
Alabama	74	206
Arkansas	34	117
Florida	84	140
Georgia	85	109
Kentucky	42	130
Louisiana	66	306
Mississippi	34	50
No. Caroline	105	103
So. Carolina	57	100
Tennessee	72	100
Virginia	43	29
Central	1,393	2,023
Illinois	441	452
Indiana	152	213
Iowa	46	132
Michigan	147	390
Minnesota	84	106
Missouri	118	178
Ohio	289	489
Wisconsin	116	64
Northwest	120	195
Colorado	12	31
Idaho	9	7
Kansas	42	70
Montana	6	13
Nebraska	16	6
No. Dakota	3	1
So. Dakota	3	a
Utah	27	60
Wyoming	2	7
Southwest	576	1,238
Arizona	1	1
New Mexico	2	1
Oklahoma	37	71
Texas	536	1,164
Far West	555	584
California	406	452
Nevada	3	38
Oregon	63	30
Washington	83	64

a. Less than $500,000

Source: Territorial Information Department, Commonwealth Edison Co. Public Service Co., Chicago, Ill. Based on ENR Contracts for manufacturing plants costing $100,000 or more.

Briefs
from the YEOMANS GUARD

New—Pump Bearings Now Immune to Ashes, Sand, Emery Dust & Iron Filings

At last we have an effective answer to bearing failures in vertical wet-pit centrifugal pumps—the Lubri-Vac® System. By providing positive lubrication of the radial bearing, *Lubri-Vac has reduced bearing failures and pump servicing by 95%.*

Lubri-Vac has been tested under field operating conditions for more than two years; and in the laboratory it has met even more grueling conditions, by pumping a solution of 3000 p.p.m. abrasive content—*60% coarse beach sand, 20% ashes, 15% iron filings and 5% emery dust!*

Performance like that shows why we have made Lubri-Vac standard equipment on all Yeomans vertical wet-pit centrifugal pumps.

There's a new bulletin with design and laboratory test data, the complete Lubri-Vac story—sent on request.

® *Registered Trade Name.*

90% B.O.D. Removal in "Aero-Filter" Plant at Plant City, Fla.

How's this for a letter?

"The Florida State Board of Health joins the City of Plant City in its pride in having such an excellent sewage treatment plant." The letter to T. J. McCall, City Manager, continues "and certainly Plant City has set an example which would be very profitable for other cities to follow."

In a later letter the State Board of Health added, ". . . we now have almost a year's operating data on this plant and . . . apparently it is achieving a B.O.D. removal in excess of 90 per cent."

This all-Yeomans waste treatment plant, built around an "Aero-Filter" and four dual Streamline Sludge Collectors, was designed by Alan B. Pimm, Consulting Engineer of Tampa, Fla., to meet the needs of the present population of approximately 10,000 with provision for possible future population growth to 15,000.

The happy sequel to this success story is the fact that numerous other communities *are* following Plant City's example. They're specifying Yeomans treatment equipment and getting high efficiency at low cost.

18,000 G.P.M. of Fly Ash and Ash Pit Drainage Handled by Yeomans Pumps

Among numerous tough pumping problems solved by Yeomans pumps is the removal of ash-pit water at what we understand is the largest electric power generator station* in the United States. Because of the highly abrasive character of the water, the four 14-inch vertical submerged mixed-flow pumps specified required the following special construction features: high Brinell Mechanite non-clogging impellers; Hastelloy "D" shaft sleeves, stainless steel shafts, casing and impeller wearing rings, and water-lubricated rubber bearings.

This ability to do a good job on unusual pumping assignments makes Yeomans a good name to remember the next time you have a tough one to solve . . . and it is added assurance that Yeomans can do a better job on your routine pumping assignments.

**Consultants on this installation were Sargent & Lundy, Engineers, Chicago.*

How to Make Your Centrifugal Pumps Last Longer . . .

If you're interested in making your centrifugal pumps last longer—and who isn't?—you should have a copy of our Manual 2000, "Handbook For Care of Centrifugal Pumps." In it you'll find easy-to-read, illustrated tips on avoiding common pump troubles . . . several helpful facts about preventive maintenance and a maintenance "timetable" reminding you of things to do every month, every three months, every six months and every year. Step 1, not listed, is —"*Now's* a good time to write for your free copy . . . Manual 2000."

The Yeomans Guard, published several times a year, is a compendium of news and useful information covering the pumping of materials and the treatment of wastes, both domestic and industrial. We shall be pleased to send you the current issue if you'd care to have it. Ask your local Yeomans Representative—listed in the telephone book yellow pages under "Pumps"—or write direct.

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Manufacturers of: Centrifugal Pumps and Pneumatic Ejectors for Buildings, Municipalities, and Industrial Applications, and a Full Line of Waste Treatment Equipment.

the best
in water
treatment,
in
LESS SPACE
...at
LOWER COST!

Accelator®

The ACCELATOR combines—in a single unit—mixing, coagulation and solids separation. It occupies a fraction of the space required by other types of conventional plants and greatly reduces installation costs. Softening, clarification and stabilization plus highly efficient algae and bacteria removal are obtained at the highest flow rates because of the ACCELATOR'S slurry recirculation and *dynamic separation. For complete details, send for your copy of Accelator Bulletin.*

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metropolitan areas fell during the 12 months ended June, 1952, the percentage of total projects started in those centers remained about the same as during the 1945-51 period. That reflected a tendency of smaller manufacturing plants to remain near existing industrial centers.

That was true for all metropolitan areas shown in the accompanying table, with the exception of Buffalo, N. Y.

Another important point in the study was the boom in the Texas industrial market from July, 1951, through June, 1952. That boom pushed the southwest region into third place in dollar volume of contracts. Texas, alone, accounted for 17% of all contracts let during that period. That was due partly to a burst of new contracts—totaling $429 million—during the 12 months ended June, 1952.

Largest industrial center in the Southwest in terms of new contracts for manufacturing plants since July, 1945, is Houston, Tex. That area is now third among all metropolitan districts. The previous year, Houston was in sixth place. The jump came because of $123 million in contract awards during the 12 months ended June, 1952.

- **Central states still lead**—Despite the big boom in the Southwest, the Central states remain the leading region in both dollar volume and in number of new manufacturing plants for the seven years from July, 1945, through June, 1952.

Ohio, Illinois, and Michigan were the chief states for new plant construction in the Central States region.

The Chicago-Gary area leads all other metropolitan industrial areas, both in number of new plants and in total dollar value.

The Southeast, led by Louisiana and Alabama, ranked second behind the Central States region with 21% of the total dollar volume of investments in new manufacturing plants since July, 1945.

Louisiana piled up a total of $146 million in industrial contracts during the 12 months ended June, 1952. The boom in petrochemicals figured largely in the total.

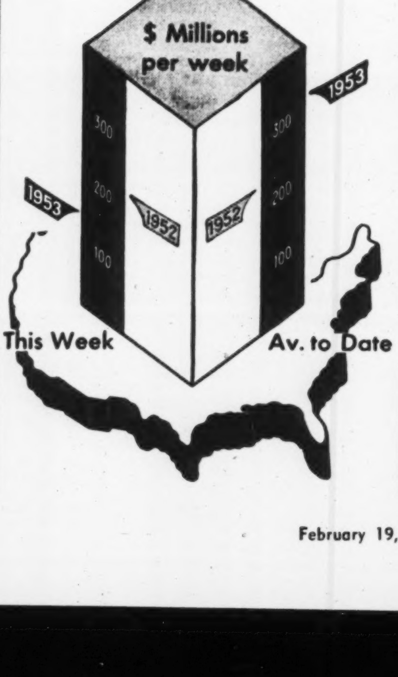
States found in the area of the Middle East dropped from third place to fourth as of June, 1952, with only 10% of the total contracts. Pennsylvania, second highest state in the country in total contracts, accounted for more than one-half of the total for the entire region. The state rolled up $663 million in contracts during the 1945-52 period.

Philadelphia-Camden held second place among metropolitan areas, almost matching the dollar volume of the leading Chicago-Gary area.

There were slight gains in the Far West, and in New England from July, 1951, to June, 1952, the study showed.

Activity This Week

As reported to ENR
(in millions of dollars)



Contracts by type of work

	This Week	Cumulative 8 wks. 1953	Cumulative 8 wks. 1952	% chge
Waterworks	$6.4	$32.8	$44.0	−25
Sewerage	1.6	62.4	29.2	+114
Bridges	2.2	70.2	36.6	+92
Highways	4.7	175.1	154.8	+13
Earthwork, waterways	6.3	66.1	62.0	+7
Buildings:				
Public	26.2	277.0	226.1	+23
Housg., pub.	3.5	132.2	116.2	+14
Housg., priv.	33.9	674.2	412.2	+64
Commercial	4.3	139.8	65.4	+114
Industrial	20.2	693.0	467.2	+48
Unclassified	34.8	264.2	205.8	+28
Total	**$144.1†**	**$2,586.9**	**$1,819.6**	**+42**

†4-day week

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

ENR indexes

		Base Year = 100 1913	1926	1949
Constr. cost	**Feb.**	**587.19**	**282.26**	**123.09**
	Jan.	587.27	282.30	123.11
Bldg. cost	**Feb.**	**425.24**	**229.87**	**120.88**
	Jan.	425.04	229.76	120.82
Volume	**Jan.**	**714**	**290**	**206**

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY. SEND ALL ADVERTISEMENTS TO CLASSIFIED ADVERTISING DIVISION, 29TH FLOOR, McGRAW-HILL PUB. CO., INC., 330 W. 42 ST., N. Y. 36, N. Y.

Bids: March 5, 1953

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 5th day of March 1953, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1 **G. L. Nickerson, District Engineer, 353 Broadway, Albany, New York**						
Albany	**C.T. 53-4** **C.T. 53-3P** **S.T.C. 53-9** **S.T. 53-10**	**N.Y.S. Thruway—Catskill Section Sub. 3A & 4 (Delaware Ave.-Normanskill); Southern Blvd. Interchange; Frisbie Avenue Ext.; McCarthy Avenue; Marginal Road "J"**	**(Thy. 2.20)** **(Acc. 1.65)**	**9" Cem. Conc. Pavt. 2 @ 25' Var. Wide=3.06 Mi. T.C. Bit. Mac.=0.76 Mi. F.C. Gravel=0.03 Mi. 2 Gr. Seps. Alpha I-Beams 91' and 154.6'**	**$104,000** **Plans $25**	**$1,923,000**
Albany & Schenectady	**M.T. 53-3** **S.T. 53-7** **R.C. 53-19**	**N.Y.S. Thruway—Mohawk Section Subs. 1 and 2 (Gordon Rd.-Albany Co. Line); Co. Rd. 32R; Co. Rd. 26R; Co. Rd. 24R; Mariaville Rd. Conn.; Co. Rd. 9R; Co. Rd. 7R; South Schenectady-Mariaville S.H.788; Schenectady-Duanesburg Pt. 1, S.H.880; Schenectady-Guilderland S.H.577**	**(Thy. 6.542)** **(Acc. 3.432)**	**9" Cen. Conc. Pavt. 2 @ 25' Var. Wide=7.827 Mi. Bit. Mac. Ty. 1=0.473 Mi. Asp. Conc. Ty. 1A, Opt.=1.614 Mi. Misc. Work=0.06 Mi. 7 Gr. Seps. Alpha I-Beam 232.6'; 213.9'; 218.7'; 186.5'; 216.9'; 193' & 190.3'; 1 Br. Conc. Closed Box 24'**	**300,000** **Plans $100**	**5,227,000**
Warren & Washington	**FASSH 53-8**	**Harriscena-Fort Ann Pt. 1, 2A & 2B Proj. S-36(3)**	**4.65**	**Bit. Mac. Opt. Rd. Mix Conc. Twin Box 20' R.C. Arch Deck 46.5'**	**28,000** **Plans $15**	**500,000**
DISTRICT No. 2 **Lacy Ketchum, District Engineer, 109 Genesee St., Utica, New York**						
Montgomery	**M.T. 53-4** **S.T. 53-8** **R.C. 53-21**	**N.Y.S. Thruway—Mohawk Section Subd. 12D & 13A (Fort Plain-Randall); Canajoharie Interchange; 6 Access Drives; Fort Plain-Canajoharie, Canajoharie-Fultonville, Pt. 1 S.H.8348 Canajoharie-Fultonville Pt. 2, S.H.8371**	**(Thy. 10.40)** **(Acc. 3.33)**	**9" Cem. Conc. Pavt. 2 @ 25' Var. Wide=12.86 Mi. Asp. Conc. Ty. 1A, Opt=0.48 Mi. Found Crse. Gravel=0.39 Mi. 3 Gr. Seps. Alpha I-Beams 121'; 132'; and 201' 4 Brs. Alpha I-Beams 262'; 374.2' 164' and 149' 1 Br. R.C. Twin Box 34'**	**520,000** **Plans $100**	**9,481,000**
DISTRICT No. 3 **Wm. Robinson, District Engineer, Weigh Lock Building, Syracuse, New York**						
Onondaga	**O.T. 53-2**	**N.Y.S. Thruway—Ontario Section Sub. 8A (Mattydale Interchange)**	**2.70**	**9" Cem. Conc. Pavt. Var. Wide=2.58 Mi. Found. Crse. Gravel=0.03 Mi. Misc. Work=0.09 Mi. 3 Gr. Seps. Alpha I-Beams 207.1'; 170'; and 215.5'**	**75,000** **Plans $25**	**1,394,000**
Oswego	**FAGC 53-4** **FAC 53-5** **FARC 53-14**	**Separation of Grades Oswego City: State Road and N.Y. O. & W. R.R. Oswego City: State Road Oswego-Mexico Pt. 1, S.H.509 Proj. U-UG 486(3)**	**1.37**	**9" Cem. Conc. Pavt. 24'-42' Wide=1.32 Mi. Asp. Conc. Ty. 1A, Opt.=0.05 Mi. R.R. Sep. Rigid Frame 40'**	**28,000** **Plans $10**	**496,000**
DISTRICT No. 4 **E. G. Youngmann, District Engineer, Barge Canal Terminal, Rochester, New York**						
Monroe	**FAC 53-3P** **FASH 53-4P**	**Rochester City: Mt. Read Blvd. FAC 50-5 Mt. Read Blvd.-Lake Ontario State Parkway Pt. 1, FASH50-4 Proj. U-UG 1093(2)**	**4.18**	**Asp. Conc. Ty. 2A=4.09 Mi. Misc. Work=0.09 Mi. 1 Gr. Sep. (RR) R.C. Rigid Frame 61' 1 Gr. Sep. (RR) Plate Girder 128' 2 Gr. Seps. (Hy.) Alpha I-Beams 133' & 178'**	**$110,000** **Plans $50**	**2,035,000**
DISTRICT No. 5 **C. R. Waters, District Engineer, 65 Courst St., Buffalo, New York**						
Erie	**R.C. 53-20**	**Collins-Mortons Corners, Pt. 1, S.H.526**	**0.04**	**Misc. Work (Replace Exist. R.C. Slab Culvert)**	**2,800** **Plans $10**	**50,000**
DISTRICT No. 6 **James H. Thomas, District Engineer, State Office Building, Hornell, New York**						
Chemung	**PSC 5987** **FASH 53-5** **FASH 53-6** **FARC 53-16**	**Elim. Gr. Cross of Chemung and Sayre Sts. with Penn. RR Horseheads-Corning S.H.358 Horseheads Village, S.H. 5162; Horseheads Village East Corning-Horseheads, Pt. 2 Proj. U-661(3)**	**3.22**	**Asp. Conc. Ty. 1A, Opt.=2.47 Mi. (Hy.) Asp. Conc. Ty. 1A, Opt.=0.72 Mi. (Acc.) Misc. Work=0.03 Mi. R.R. Sep. R.C. Rigid Frame 44'**	**70,000** **Plans $15**	**1,307,000**
DISTRICT No. 8 **J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, New York**						
Orange	**FASH 53-7** **FARC 53-17**	**Palisades Interstate Park-Goshen, Pt. 3 (Chester-Goshen); Chester-Florida S.H.1809; Chester-Goshen S.H.156; Goshen Village; S. Church, W. Main Sts. and Greenwich Ave., S.H.1329 and 4 Access Roads Proj. FI-1050(5)**	**4.59 Hy.** **1.64 Acc.**	**9" Com. Conc. Pavt. 2 @ 25' Var. Wide=4.17 Mi. Asp. Conc. Ty. 1A, Opt.=0.82 Mi. Found. Crse. Gravel=1.18 Mi. Misc. Work=0.06 Mi. 1 Gr. Sep. R.C. Rigid Frame 45.4' 2 Gr. Sep. Alpha I-Beam 212', 207.8' 1 Br. Twin R.C. Box 40.3'**	**$190,000** **Plans $50**	**3,374,000**
DISTRICT No. 9 **F. W. Donovan, District Engineer, 71 Frederick Street, Binghamton, New York**						
Broome	**FARC 53-18**	**Binghamton-Windsor, Pt. 2 S.H. 5022 Proj. U-344(19)**	**2.67**	**9" Cem. Conc. Pavt. 2 @ 25' Wide Ext. 48.09' I-Beam**	**90,000** **Plans $15**	**1,648,000**
Delaware	**FASSH 53-3**	**Cadosia-Granton Proj. S-147(2)**	**3.58**	**Bit. Mac.=3.54 Mi. Misc. Work=0.04 Mi.**	**30,000** **Plans $15**	**550,000**
DISTRICT No. 10 **J. J. Darcy, District Engineer, Montauk Highway, at Little East Neck Road, Babylon, L. I., New York**						
Nassau	**PSC 7276**	**Elimination of L.I.R.R. Gr. Cross. with Centre Ave., Village Ave. and Park Ave. Village of Rockville Center**	**0.25**	**Viaduct Lighting**	**$600** **Plans $10**	**10,000**
Suffolk	**FARC 53-4** **FASH 53-2**	**Maywood-Babylon, S.H.1841 Maywood-Babylon, Part 2 Babylon Village, S.H. 5299 Proj. U-985(7), U-874(4)**	**2.53**	**9" Cem. Conc. Pavt. 2 @ 25', 50' Wide=1.30 Mi. Asp. Conc. Ty. 1A, Opt.=1.05 Mi. Misc. Work=0.18 Mi.**	**58,000** **Plans $15**	**1,050,000**

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to the "Controlled Materials Plan" of the National Production Authority as well as to regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

(Continued on page 292)

Bids: March 13, 1953

PUERTO RICO TRANSPORTATION AUTHORITY
CONSTRUCTION OF PASSENGER TERMINAL BUILDING
PUERTO RICO INTERNATIONAL AIRPORT

1. RECEIPT AND OPENING OF BIDS.—Sealed bids in triplicate for the construction of Passenger Terminal Building at the Puerto Rico International Airport will be received by the Puerto Rico Transportation Authority, at the office of its General Manager at Building 53, Isla Grande Airport, San Juan, Puerto Rico until 2:00 o'clock P.M. Puerto Rico Time on the 13th day of March 1953 at which time and place all bids received will be publicly opened and read aloud.

2. WORK.—The work consists of the construction of the Passenger Terminal Building of several wings and extensions together with related work, including exterior utilities and paving. The Building includes elevators, control tower, food preparation and dispensing facilities fully equipped, to extent shown or specified, dining areas, hotel rooms, offices and other areas.

3. PLANS AND SPECIFICATIONS.—Contract documents, including Plans and Specifications are on file at the office of the Chief Engineer of the Puerto Rico Transportation Authority, at Building 53, Isla Grande Airport, San Juan, Puerto Rico. Copies of the documents may be obtained from the Puerto Rico Transportation Authority by depositing one hundred dollars ($100.00) with the Puerto Rico Transportation Authority for each set of documents. The amount of the deposit will be refunded upon return of the entire set of documents in good condition within twenty (20) days after the opening of bids. However, seventy-five dollars ($75.00) only will be refunded to bona-fide bidders for extra sets returned, and to those taking sets and not filing formal proposals. A set of contract documents will also be available for inspection at Civil Aeronautics Administration Office, 50-7th Street N.E., Atlanta 5, Georgia and at the offices of the Knappen Tippetts Abbett Engineering Company, 62 West 47th Street, New York, N. Y.

4. BID GUARANTEE.—A certified check or bank draft payable to the Puerto Rico Transportation Authority, U. S. Government Bonds, or a satisfactory bid bond executed by the bidder and acceptable sureties, in an amount equal to five per cent (5%) of the bid shall be submitted with each bid.

5. REJECTION OF BIDS.—The Puerto Rico Transportation Authority reserves the right to reject any or all bids and to waive any informalities in the bids.

6. WAGE RATES.—All bids shall be based on wage rates not less than the minimum wage rates as predetermined by the Secretary of Labor of the United States, schedule of which is included in the Specifications.

7. PERFORMANCE AND PAYMENT BONDS.—The successful bidder will be required to furnish satisfactory performance and payment bond or bonds.

8. ADDENDA: INTERPRETATION OF CONTRACT DOCUMENTS.—No interpretation of the meaning of the Plans, Specifications, or other Contract Documents will be made orally to any bidder. Every request for such interpretation must be in writing, addressed and forwarded to the Engineering Division of the Puerto Rico Transportation Authority. No inquiry received within five (5) days of the date set for opening of bids will be given consideration. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the Specifications and which, if issued, will be sent as promptly as practicable to all prospective bidders. All addenda so issued shall become part of the Contract Documents. Failure of any bidder to receive any such addendum shall not relieve him from obligation under his bid as submitted.

9. WITHDRAWAL OF PROPOSALS.—No proposal can be withdrawn after it is filed unless the bidder makes his request in writing or by telegram, or unless the Authority fails to accept it within thirty (30) days after the date fixed for opening bids. Written or telegraphic requests for withdrawal of proposals must be dispatched by the bidder in time for delivery in the normal course of business prior to the time fixed for opening bids. Telegraphic withdrawals must be confirmed in writing over the signature of the bidder within 48 hours thereafter. At the time of opening of the proposals, when such proposal is reached, it will be returned to the bidder unread.

10. STATEMENTS OF BIDDERS.—Prior to the time of the opening of bids all bidders are required to submit statements as to their financial condition, equipment proposed to be used in thhe work, experience on similar work, organization, and methods to be used in prosecuting the work. Blank forms will be furnished by the Authority for the convenience of the bidders, but the use of these forms is not mandatory provided the bidder furnishes the required information.

YOLANDO O'CORRIE,
GENERAL MANAGER

Road Work

Sealed proposals, addressed to STATE OF MISSOURI, acting by and through THE STATE HIGHWAY COMMISSION OF MISSOURI, Jefferson City, Missouri, and endorsed "Proposal" for constructing (or improving) Route 54, Project F-97 (10), Cole & Callaway County, will be received by the Commission until 10:00 o'clock A. M., on either the 16th day of March, 1953 or the 2nd day of April, 1953 at the office of the Commission in the State Highway Building at Jefferson City, and at that time will be publicly opened and read.

The proposed work includes: a bridge over the Missouri River at Jefferson City, with the following principal quantities:

Concrete in bases of 3 pneumatic piers 9,970 Cu.Yds.

Other concrete in substructure & superstructure 10,330 Cu.Yds.

Structural Steel 10,000,000 Pounds.

Reinforcing Steel 1,320,350 Pounds.

Plans and specifications may be inspected in the offices of the Commission at Jefferson City, or the Division Engineer at Jefferson City, Missouri. Complete instructions to bidders and proposal blanks may be obtained at the Jefferson City office.

Proposals must be on forms provided.

The right is reserved to reject any or all bids.

REX M. WHITTON,
Chief Engineer.

Bids: February 23, 1953

Distribution—Pipe—Fittings—Valves—Hydrants

Sealed proposals will be received at the Derby School, Derby, Colorado, until 8:00 P.M., February 27, 1953, for furnishing pipe, valves, fittings and hydrants for a distribution system.

Includes approximately 42,000 ft. of 8" pipe, 136,000 ft. of 6" pipe, 102,000 ft. of 4" pipe, with fittings, valves and hydrants. Pipe to be class 150. Alternate bids will be received for mechanical joint cast iron pipe coated inside with "Enamaline" or equal and Asbestos Cement Pipe.

Bids shall be accompanied by a certified check or bid bond payable to The South Adams County Water and Sanitation District, for a sum equal to 5% of the amount of the bid. Proposal forms may be obtained from Ripple and Howe, Consulting Engineers, 833 - 23rd Street, Denver 5, Colorado. The District reserves the right to reject any or all bids or to accept the proposal which appears most advantageous.

E. C. Francon, Secretary
SOUTH ADAMS COUNTY WATER & SAN. DISTR.

U. S. Government

Sealed bids will be received in the office of the Engineering and Construction Director, The Panama Canal, Balboa Heights, Canal Zone, until 10:00 A.M. Eastern Standard Time, April 15, 1953, for furnishing all plant, tools, equipment, materials, labor, and services and performing all work for the preparation of sites and construction of utilities, pavements, and buildings for Cardenas Townsite, Cardenas, Canal Zone. Sixty-six masonry type quarters buildings, one telephone exchange and one electrical substation are included in this project.

Copies of plans and specifications may be obtained from the Panama Canal Company, 24 State Street, New York 4, N. Y. Requests should be accompanied by a $40.00 deposit for each set, the deposit to be in the form of a United States money order or certified check payable to "Treasurer, Panama Canal Company." The plans and specifications may be inspected at the following places:

The Panama Canal, 101 Indiana Ave. N. W., Washington 25, D. C.

Office of the District Engineer, U. S. Engineer's Office, 4735 East Marginal Way, Seattle 4, Washington.

Office of the District Engineer, U. S. Engineer's Office, 751 S. Figueroa Street, Los Angeles 55, California.

Office of the District Engineer, U. S. Engineer's Office, P. O. Box 1538, Albuquerque, New Mexico.

Office of the Division Engineer, U. S. Engineer's Office, Southwestern Division, 1114 Commerce Street, Dallas, Texas.

The Panama Canal, 24 State Street, New York 4, N. Y.

Office of the District Engineer, U. S. Engineer's Office, 180 New Montgomery Street, San Francisco 19, California.

Office of the District Engineer, U. S. Engineer's Office, 1709 Jackson Street, Omaha 2, Nebraska.

Office of the District Engineer, U. S. Engineer's Office, Foot of Prytania Street, New Orleans, La.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3889) will be received at Lindsay, California, until 10 a.m., March 10, 1953, for furnishing labor and materials for earthwork, pipe lines, and structures, Unit 2, Delano-Earlimart Irrigation District, Central Valley Project, California. Location: Near Delano, California. Principal items are: 295,000 cu. yds. of excavation for furnishing and laying 65 miles of precast concrete pipe lines for irrigation distribution system, pipe diameters vary from 12 inch to 69 inch and heads from 50 ft. to 150 ft.; 1,600 cu. yds. of concrete in structures; furnishing materials and installing electrical system and metalwork; and other work. Completion time 660 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 53, Denver Federal Center, Denver Colorado.

MICHAEL W. STRAUS, Commissioner

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3891) will be received at Superior, Nebraska, until 10 a.m., CST., March 17, 1953, for furnishing labor and materials for earthwork and structures for Franklin canal, Station 750 to Station 1454, and drains, Bostwick Division, Nebraska-Kansas, Missouri River Basin Project. Location in the vicinity of Franklin and Riverton, Nebraska. Principal items are: 1,704,000 cu. yds. excavation; 2,800 cu. yds. concrete; 14,200 lin. ft. concrete pipe; 42,000 pounds metalwork; and other work. Completion time 460 days. For particulars, address Bureau of Reclamation, Superior, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3888) will be received at Folsom, California, until March 5, 1953, for furnishing labor and materials for Sly Park Dam, Sly Park Unit, American River Division, Central Valley Project, California. Location: About 12 airline miles east of Placerville, California. Principal items are: Excavation, 1,250,000 cu. yds.; dam embankment, 900,000 cu. yds.; furnishing and laying 8,500 lin. ft. of 42-inch and 48-inch concrete pipe; drilling grout holes, 15,000 lin. ft.; pressure grouting, 30,000 sacks; furnishing and placing reinforcement steel, 878,000 lbs.; concrete, 6,500 cu. yds.; and other work. Completion time 650 days. For particulars, address Bureau of Reclamation, Folsom, California; or Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner

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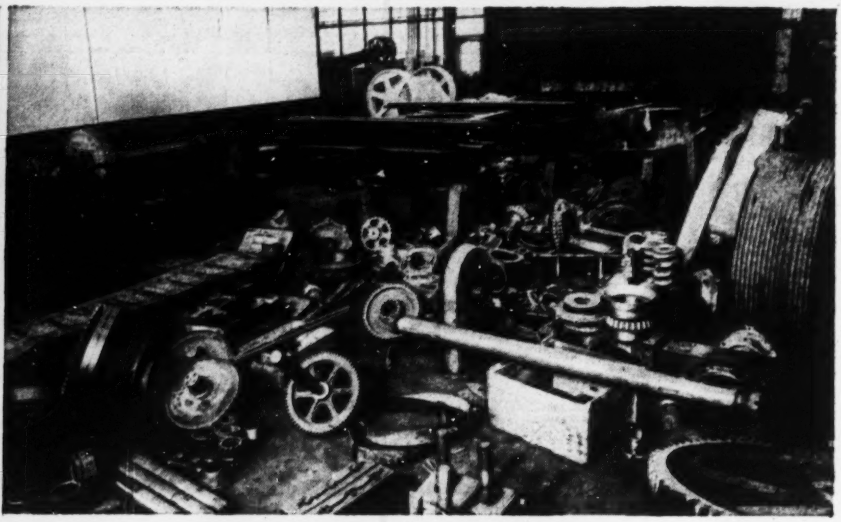

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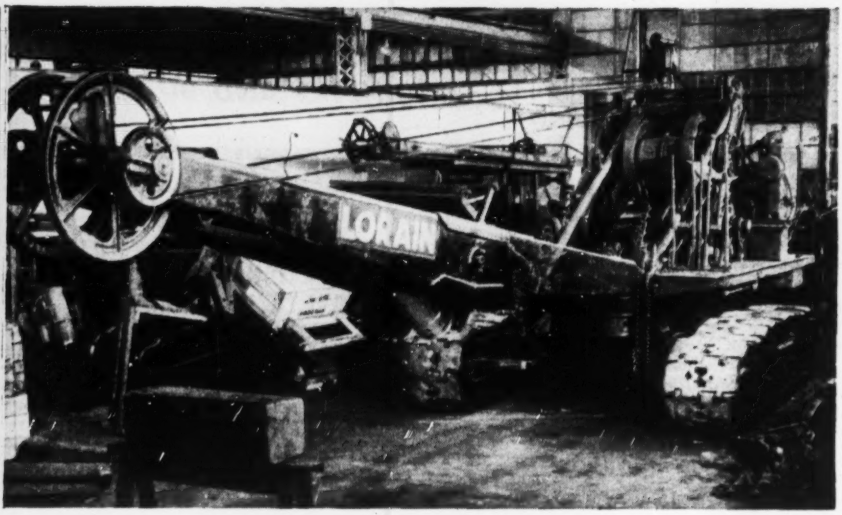

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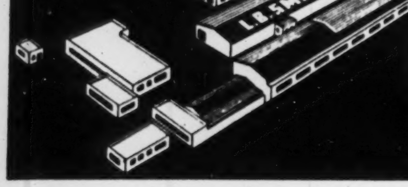
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Gardner-Denver 500 cu. ft. diesel, new condition.
Gardner-Denver 500 cu. ft. diesel, good operating condition.
Worthington two-stage, water-cooled, vertical 250#, 60 CFM, new condition.
Paving breakers, jackhammers, wagon drills, tie tampers.

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4033 Cedarapids Model 6C plant. New.
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1½-ton Ford with any body.
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Lorain 77, 1½-yd. diesel.
Lorain 75B, 1¼-yd. diesel.
Lorain L-50-I, 1-yd. diesel.
Lorain 40 truck crane on Mack 3-axle truck.
Buckeye ¾-yd. diesel.
Unit 514, ½-yd. gasoline crawler shovel, rebuilt.
Lorain 30A, ½-yd. gas combination.

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Lorain 40 Hi-Lift shovel attachment.
P&H 203 shovel attachment.
Chain crowd Lorain 30A shovel attachment.
Bucyrus-Erie 1½-yd. rock bucket.
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McCaffrey Model 636 for ¾-yd. to 1-yd. crane.
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16"	4	1/8"	1/32"	28 Oz.
18"	4	1/8"	1/32"	28 Oz.
20"	4	1/8"	1/32"	28 Oz.
20"	5	1/8"	1/32"	28 Oz.
24"	4	1/8"	1/32"	28 Oz.
24"	5	1/8"	1/32"	28 Oz.
26"	5	1/8"	1/32"	28 Oz.
30"	4	1/8"	1/16"	32 Oz.
30"	5	1/8"	1/16"	32 Oz.
30"	6	1/8"	1/16"	32 Oz.
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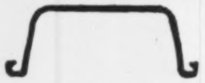

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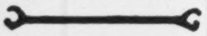

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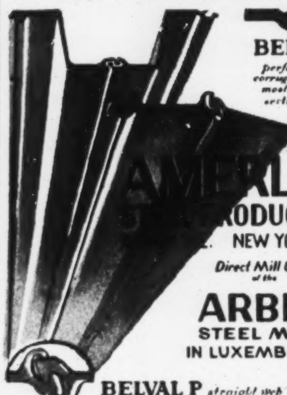

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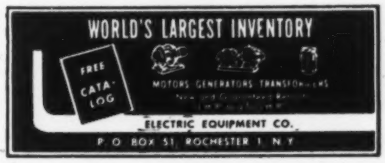
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OFFICIAL PROPOSALS

Bids: March 4, 1953

Construction of Additions to Sewage Treatment Plant

OFFICE OF THE MAYOR, CITY OF LIMA, OHIO

Contract No 33 - P - 414 January 31, 1953

Sealed proposals will be received by the Mayor of the City of Lima, Allen County, Ohio, at his office in the City Building until 12 o'clock noon, Eastern Standard Time, on Wednesday, March 4, 1953, and then publicly opened and read for the construction of additions to and modifications of the Sewage Treatment Plant of the City of Lima, Allen County, Ohio.

The work will consist principally of:

Remodeling the existing inlet diversion chamber; laying a new inlet sewer; constructing a screen chamber; detritor basin, screen, and detritor building, two (2) primary sedimentation tanks, storm water overflow, venturi pit, excess sludge thickener; three (3) aeration tanks, one (1) final sedimentation tank, chlorine contact tank, chlorination building, one (1) digester, digestion control building and sludge beds; installing mechanical equipment, connecting piping, electrical facilities, flow measuring devices, pumps, blowers, and heating and ventilating equipment; remodeling the primary sludge handling and pumping facilities; the return activated sludge handling and pumping facilities, the aeration tanks, the final sedimentation tanks, the outlet control chamber and the sludge digestion facilities, and the furnishing and installing of auxiliary equipment and piping, all in accordance with the Plans and Specifications.

Plans and pamphlet containing the Contract Documents consisting of Invitation and Information for Bidders, blank form for Bid or Proposal, form of Contract, and Specifications for the work are on file in the office of the Mayor at the City Building, Lima, Allen County, Ohio, and at the office of the Engineer, Alfred B. Anderson, 990 Broad Street, Newark 2, New Jersey, and may be inspected by prospective bidders during office hours.

The successful bidder will be required to pay the minimum wage rate established by the Department of Industrial Relations of the State of Ohio. No bidder may withdraw his proposal for a period of thirty (30) days after the date of the opening of the bids.

Plans and contract documents may be obtained at either location upon the deposit of $25.00 for each set. The deposit will be refunded if the documents are returned in good condition not later than fifteen (15) days after the award of the contract.

All bids shall be made on the blank form provided in the Contract Documents.

A certified check upon a solvent bank or satisfactory bid bond in the amount of five percent (5%), of the total bid made payable to the order of the City of Lima, Ohio, shall accompany the Proposal, but in a separate envelope. Said check or bond to be a guarantee that if the proposal is accepted a contract will be entered into and the performance of it properly secured as required.

Terms of Proposal and Sureties required are fixed by the Contract Documents.

The contract will be awarded to the lowest and best Bidder, but the right is reserved by the Mayor to reject any and all bids or to waive any informalities in favor of the City.

By direction of the Council of the City of Lima, Ohio.

Stanley A. Welker
Mayor City of Lima, Ohio

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING D. C., February 4, 1953. SEALED PROPOSALS will be received in 429, District Building, 14th and 'E' Streets, N.W., Washington 4, D. C., until 2:00 P.M., EASTERN STANDARD TIME, March 9, 1953, and then publicly opened and read for the construction of SECTION 2 OF EAST BRANCH PINEY BRANCH TRUNK SEWER, vicinity of 14th and Randolph Streets, N.W., Washington, D. C. This project consists of the following: In Open Cut—75 linear feet 18'0" x 10'0" brick and reinforced concrete masonry sewer; 95 linear feet 15'0" diameter brick and reinforced concrete masonry sewer; 28 linear feet transition sections; 2 special manholes. In Tunnel—1,895 linear feet 15'0" diameter brick and concrete masonry sewer; 45 linear feet 3'0" diameter brick and concrete masonry sewer; 16 linear feet transition sections. Proposal forms, drawings, and specifications may be obtained, upon the deposit of a certified check in the amount of Fifty Dollars ($50.00), from Secretary, Contract Board, D. C., Room 429, District Building. (Telephone National 8-6000, Extension 2307)

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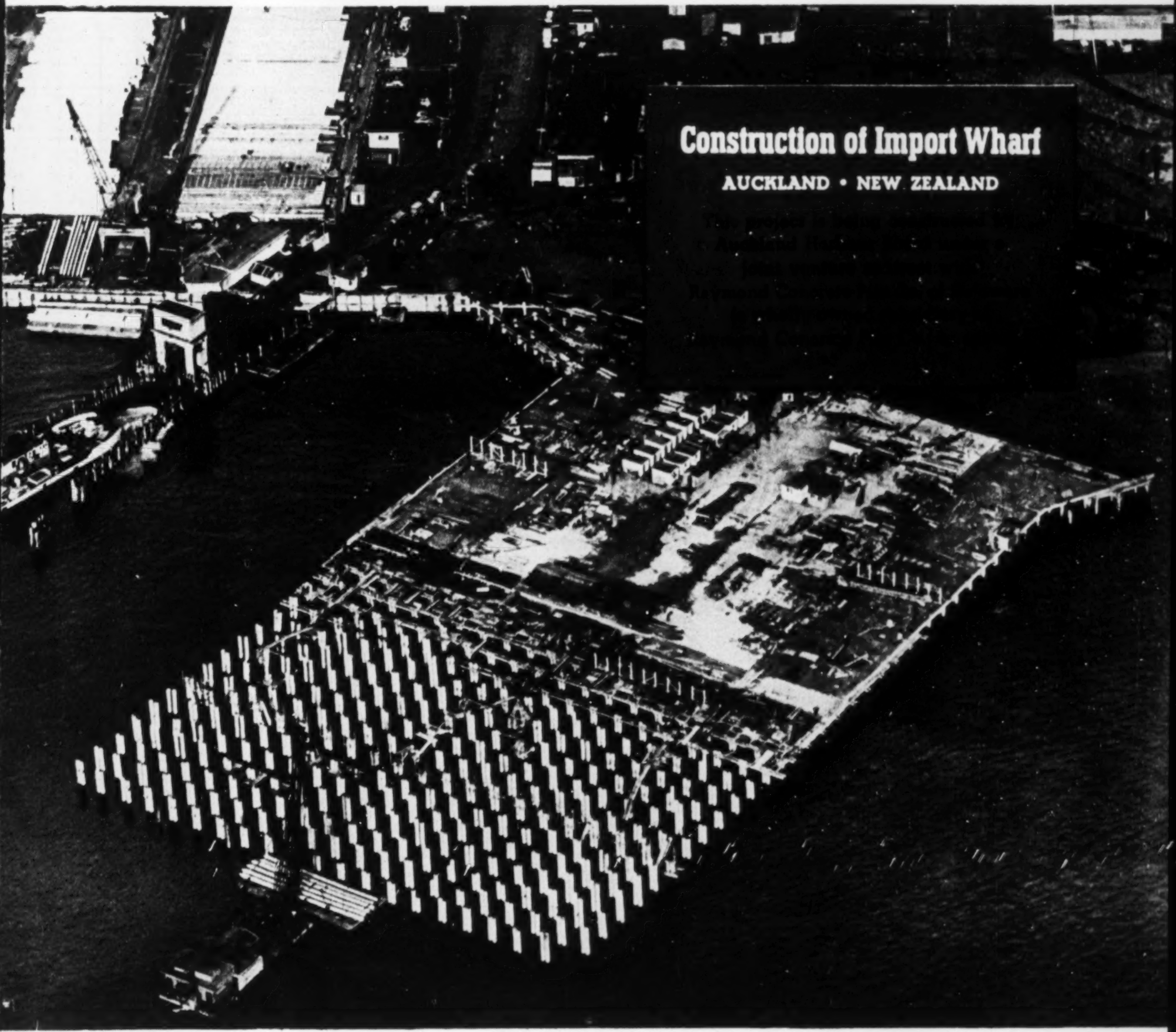

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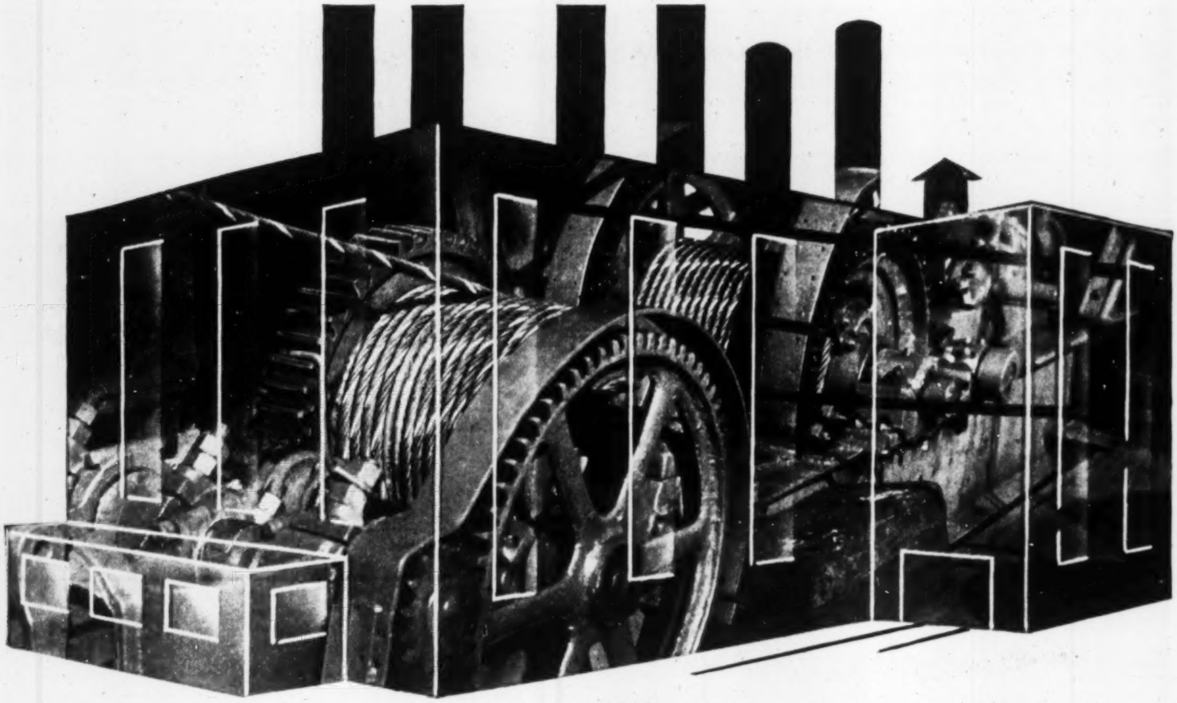

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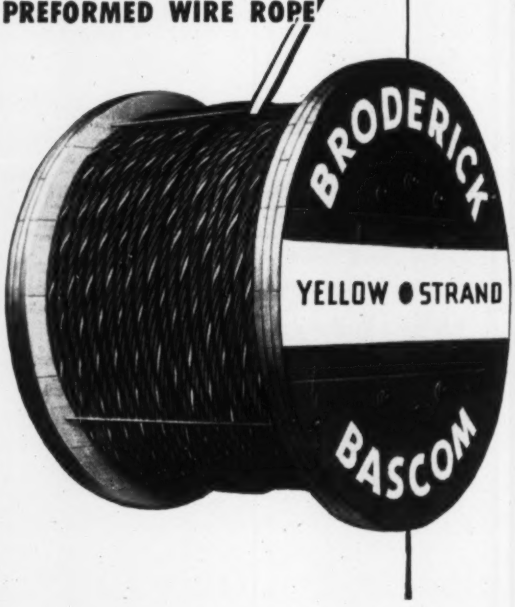

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